CAREER & TECHNOLOGY STUDIES

AGRICULTURE

GUIDE TO STANDARDS AND IMPLEMENTATION

INTERIM 1994

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This document was prepared for:

Administrators	✓
Counsellors	✓
General Audience	
Parents	
Students	
Teachers	✓

Program/Level: Career and Technology Studies/S

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NOTE: Shaded areas within this document have been approved for optional implementation. Assessment conditions and criteria are in draft form and will be validated 1994–97.

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CAREER AND TECHNOLOGY STUDIES

PROGRAM PHILOSOPHY/RATIONALE

Through Career and Technology Studies (CTS), secondary education in Alberta is responding to the many challenges of modern society, helping young people develop daily living skills, and nurturing a flexible, well-qualified work force.

In Canada's information society, characterized by rapid change in the social and economic environment, students must be confident in their ability to respond to change and successfully meet the challenges they face in their own personal and work lives. In particular, they must make decisions about what they will do when they finish high school. Many students will enter the work force, others will continue their education. All students face the challenges of growing independence and responsibility, and of entering the highly competitive workplace and/or post-secondary programs.

Secondary schools also face challenges. They must deliver, on a consistent basis, high quality, cost-effective programs that students, parents and community find credible and relevant.

CTS helps schools and students meet these challenges. Schools can respond more efficiently and effectively to student and community needs and expectations by using the opportunities in the CTS curriculum to design courses and access school, community and distance learning resources. Students can develop the confidence they need as they move into adult roles by assuming increased responsibility for their learning; cultivating their individual talents, interests and abilities; and defining and acting on their goals.

As an important component of basic education in Alberta secondary schools, CTS promotes students' achievement by setting clear expectations and recognizing students' success. Students in CTS develop competencies—that is, the knowledge, skills and attitudes students must demonstrate, or what they know and can do.

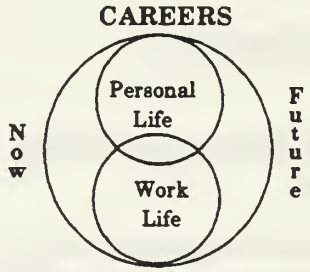
These competencies can be applied now and in the future as students make a smooth transition into adult roles in the family, community, workplace and/or further education. To help ensure this transition for students, clearly stated expectations and standards have been defined with the assistance of teachers, business and industry representatives and post-secondary educators.

CTS offers *all* students important learning opportunities. Regardless of the particular area of study chosen, students in CTS will:

- develop skills that they can apply in their daily lives now and in the future
- refine career-planning skills
- develop technology-related skills
- enhance employability skills
- apply and reinforce learnings developed in other subject areas.

In CTS, students build skills they can apply in their everyday lives. For example, in the CTS program, particularly at the introductory levels, students have the opportunity to improve their ability to make sound consumer decisions, and to appreciate environmental and safety precautions.

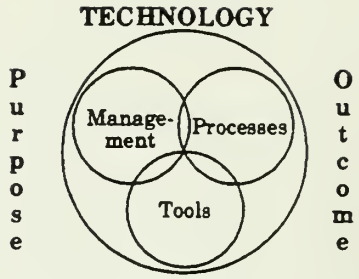
A career encompasses more than activities related to a person's job or occupation; it involves one's personal life in both local and global contexts; e.g., as a family member, a friend, a community volunteer, a citizen.



The integration of careers throughout the CTS program helps students make effective career decisions and target their efforts. Students in CTS will have the opportunity to expand their knowledge about careers, occupations and job opportunities and the education and/or training requirements involved. As well, they will recognize the need for lifelong learning.

Students in CTS will have the opportunity to use and apply technology and systems effectively and efficiently, which involves:

- a decision regarding which processes and procedures best suit the task at hand
- the appropriate selection and skilled use of the tools or resources that are available
- an assessment of and management of the impact the use of the technology may have on themselves, on others and on the environment.



Integrated throughout CTS are employability skills, those basic competencies that help students develop their personal management and social skills. Personal management skills are improved as students take increased responsibility for their learning, design innovative solutions to problems or challenges, and manage resources effectively and efficiently. Students' social skills improve through learning experiences that require them to work effectively with others, demonstrate teamwork and leadership, and maintain high standards in safety and accountability.

Further enhancing the employability skills, CTS reinforces and enhances learnings developed in core and other complementary courses. The curriculum emphasizes, as appropriate, the effective application of communication and numeracy skills.

Finally, in addition to the common outcomes described above, those students who focus on a particular area of study will develop career-specific competencies that support entry into the workplace and/or related post-secondary programs. Career-specific competencies can involve understanding and applying appropriate terminology, processes and technologies related to a specific career, occupation or job.

GENERAL LEARNER EXPECTATIONS

General learner expectations describe the basic competencies that are integrated throughout the CTS program.

Within an applied context that is relevant to personal goals, aptitudes and abilities, the student in Career and Technology Studies will:

- demonstrate the basic knowledge, skills and attitudes necessary for achievement and fulfillment in personal life
- develop an action plan that relates personal interests, abilities and aptitudes to career opportunities and requirements
- use technology effectively, linking and applying available tools, management and processes to produce a desired outcome
- develop personal management skills by:
  - linking theory and practice, using resources, tools, technology and processes responsibly and efficiently (managing learning)
  - applying effective and innovative decision-making and problem-solving strategies in the design, production, marketing and consumption of goods and services (being innovative)
  - selecting relevant, goal-related activities, ranking them in order of importance, allocating necessary time, and preparing and following schedules (managing resources)
- improve social interaction skills by:
  - demonstrating flexibility and cooperative work and communication behaviors (working with others)
  - participating as a team member by working cooperatively with others and contributing to the group with ideas, suggestions and effort (teamwork and leadership)
  - demonstrating high standards of diligence, attendance and punctuality, following safe procedures consistently, and recognizing and eliminating potential hazards (demonstrating responsibility)
- demonstrate appropriate verbal, written, composition, summarization and presentation skills
- use basic computation and measurement principles accurately and efficiently.

PROGRAM ORGANIZATION

CURRICULUM STRUCTURE

Career and Technology Studies is organized into *strands* and *modules*.

Strands in CTS define competencies that help students:

- build daily living skills
- investigate career options
- use technology (managing, processes, tools) effectively and efficiently
- prepare for entry into the workplace and/or related post-secondary programs.

In general, strands relate to selected industry sectors that offer positive occupational opportunities for students. Some occupational opportunities require further education after high school, and some allow direct entry into the workplace. The industry sectors encompass both goods-producing industries, such as agriculture, manufacturing and construction, and service-producing industries, such as business services, health services, and finance and insurance services.

Modules are the building blocks for each strand. They define what a student is expected to know and be able to do (exit-level *competencies*). Modules also specify prerequisites and facility and instructional parameters, where necessary.

The competencies a student must demonstrate to achieve success in a module are defined through the *module learner expectations*. Senior high school students who can demonstrate the module learner expectations (i.e., have the designated competencies) will qualify for one credit towards their high school diploma.

Module learner expectations are a culmination of the *specific learner expectations*, which provide a more detailed framework for instruction. They define the scope and depth of knowledge, skills and attitudes the student should acquire.

The following chart shows the 21 strands that comprise the CTS program and the number of modules available in each strand.

Strand	No. of Modules
1. Agriculture	31
2. Career Transitions	13
3. Communication Technology	32
4. *Community Health*	*25**
5. Construction Technologies	46
6. *Cosmetology*	*64**
7. Design Studies	31
8. *Electro-Technologies*	*33**
9. *Energy and Mines*	*27**
10. Enterprise and Innovation	8
11. *Fabrication Studies*	*39**
12. *Fashion Studies*	*37**
13. Financial Management	15
14. Foods	37
15. Forestry	21
16. Information Processing	43
17. Legal Studies	13
18. *Management and Marketing*	*26**
19. *Mechanics*	*49**
20. Tourism Studies	24
21. Wildlife	17

*Estimate

Note: *As of September 1994, 13 of the 21 strands are available for optional implementation in Alberta junior and high schools. The remaining strands, indicated above in italics, will be phased in from September 1995 to September 1996. Provincial implementation of all strands is scheduled for September 1997.*

LEVELS OF ACHIEVEMENT

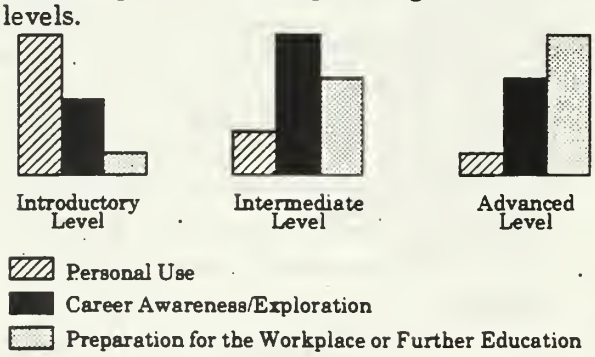
Modules are organized into three levels of achievement: introductory, intermediate and advanced. As students progress through the levels, they will be expected to meet higher standards and demonstrate increased degree of competence, both in the general learner expectations and the module learner expectations.

Introductory level modules help students build daily living skills and form the basis for further learning. Introductory modules are developed for students who have no previous experience in the strand.

Intermediate level modules build on the competencies developed at the introductory level. They provide a broader perspective, helping students recognize the wide range of related career opportunities available within the strand.

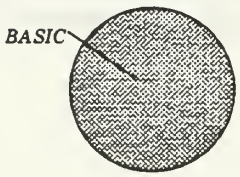
Advanced level modules demand a higher level of expertise and help prepare students for entry into the workplace or a related post-secondary program.

The following illustrates the relative emphasis on the aspects of career planning at each of the levels.



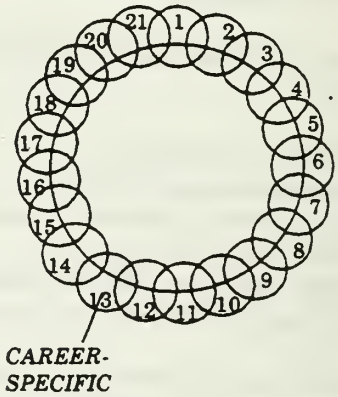
TYPES OF COMPETENCE

Two types of competence are defined within the CTS program: basic and career-specific.



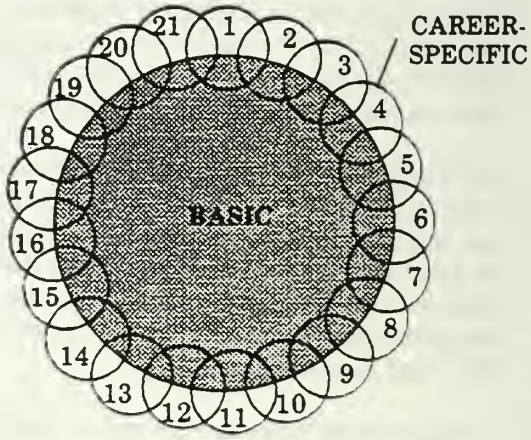
Basic Competencies are generic to any career area and are developed within each module. Basic competencies include:

- personal management; e.g., managing learning, being innovative, ethics, managing resources
- social; e.g., communication, teamwork, leadership and service, and demonstrating responsibility (safety and accountability).



Career-specific Competencies relate to a particular strand. These competencies build daily living skills at the introductory levels and support the smooth transition to the workplace and/or post-secondary programs at the intermediate and advanced levels.

The following model shows the relationship of these two types of competencies within the 21 strands of CTS (numbers refer to the chart on page A.5):



CURRICULUM AND ASSESSMENT STANDARDS

CURRICULUM STANDARDS

Curriculum standards in CTS define what students must know and be able do. Curriculum standards are expressed through general learner expectations for CTS, and through module and specific learner expectations for each strand.

ASSESSMENT STANDARDS

Assessment standards define how the student's performance will be judged. In CTS, each assessment standard defines the conditions and criteria to be used for assessing the competencies defined in each module learner expectation. Students must fully meet each assessment standard, including all of the criteria and conditions defined for the module. Assessment standards are in draft form, as are tools and weightings, and will be validated 1994–97.

Teachers throughout the province will be able to ensure students receive a fair and reliable assessment. Students will use the assessment standards to guide their efforts, ensuring they participate more effectively and successfully in the learning and assessment process. Standards at advanced levels are as much as possible linked to workplace and post-secondary entry-level requirements.

The following pages describe the Agriculture strand in the Career and Technology Studies program.

AGRICULTURE

STRAND RATIONALE

Agriculture is a diverse endeavour involving both rural and urban communities. It affects the quality of life enjoyed by all Albertans. Agriculture encompasses not only the direct production of primary goods, but also processing and service industries. It is the second most important area of economic activity in Alberta.*

Growth and development opportunities exist for agriculture products and technologies. The continued strength of our agriculture industry in domestic and international markets can be ensured through practices that add value to agricultural commodities, and by diversifying products and services to meet consumer needs.

Agriculture involves the use of our most basic resources: soils, water, plants, animals and people. Concern for the environment provides continuing incentive for new technologies and methods of managing interactions among these resources. Industry practices must ensure sustainable use of our natural resource base.

Agriculture, a strand in Career and Technology Studies, provides a comprehensive view of agriculture in Alberta. It encompasses plant and animal production, interior and exterior plantscape, animal husbandry, the agrifood industry, market research and development, and environmental management. Students will develop first-hand knowledge of practices within Alberta's agriculture industries, and apply knowledge gained in producing agricultural products and providing related services.

Within the philosophy of Career and Technology Studies, students in Agriculture will develop the knowledge, skills, attitudes, motivation and commitment to work individually and collectively, as private citizens and members of the work force, toward the conservation and responsible use of water, land, air, forests and wildlife. In order to achieve these competencies, *the student will:*

- develop greater awareness of the economic, environmental and social significance of agriculture in society and the global marketplace, and of factors affecting industry decisions
- describe the characteristics of Alberta's agriculture and horticulture industries, and identify resulting products and services
- describe technologies and research programs designed to enhance development of a range of products and services and achieve sustainable use of natural resources

*Alberta Agriculture, Food and Rural Development. *Agriculture in Alberta.* Edmonton, Alberta: Alberta Agriculture, Food and Rural Development, 1993.

- translate development and conservation goals into viable plans for developing and marketing agricultural and horticultural products and services

- develop competencies and behaviours that have broad application to environmental career paths, and specific application to careers within Alberta's agriculture and horticulture industries.

Although students are at various stages of cognitive development, many will continue to use concrete operational thinking. Each module in Agriculture provides opportunities for students to link concrete and psychomotor learning experiences to more abstract thought processes and levels of thinking. Students will be encouraged to transfer the competencies they have developed in other core and complementary school courses as well as through hobbies, interests and past experiences. As students learn to relate theory and practice in participatory situations, confidence will further their ability to meet personal and professional challenges.

STRAND ORGANIZATION

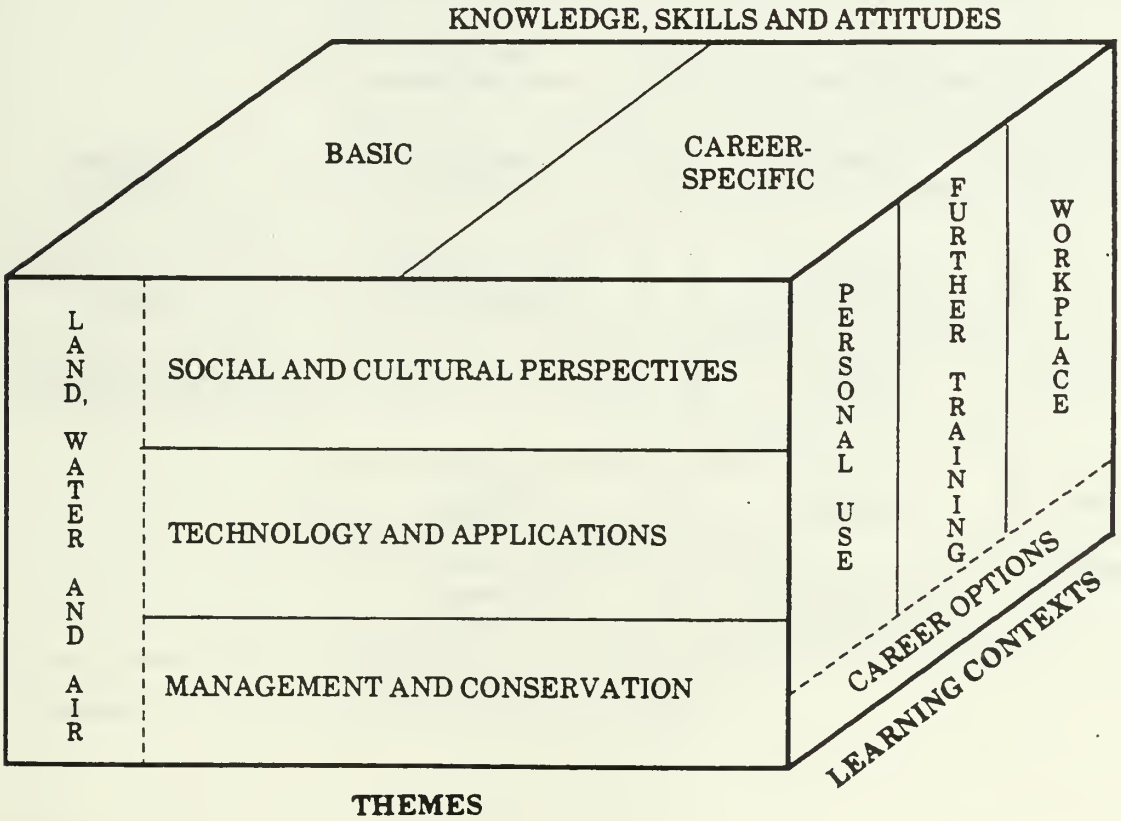
DEVELOPMENT MODEL

The development model depicts major emphases within the Agriculture strand. Three dimensions that provide a basis for selecting and organizing content are represented in the model.

- The KNOWLEDGE, SKILLS AND ATTITUDES, represented on the upper face of the model, provide structure for the course and focus attention on learning goals common to all CTS courses.
- The LEARNING CONTEXTS, represented on the right face of the model, foster the development of knowledge and behaviours that will enable students to meet the demands of daily living, further training and the workplace.
- The THEMES provide situational and concrete learning experiences that support the development of knowledge, skills and attitudes relevant to each of the learning contexts. Each theme focuses attention on a different aspect of our use of land and resources. Blended together, the themes enable students to understand our responsibility to fulfill social, cultural, aesthetic and economic goals through resource development, while embracing a conservation ethic so as to maintain essential ecological processes, genetic diversity and an adequate resource base for future generations.

LEVELS

Agriculture, like other Career and Technology Studies curricula, is organized into three levels of learning: introductory, intermediate and advanced.



Introductory modules enable students to develop an understanding of the significance of agriculture industries to Albertans. Students study sample areas of production, processing and marketing, and examine technologies that support effective agriculture practice. Intermediate and advanced level modules develop more specialized knowledge and skills within an area of production, marketing or service. Students examine the role of agriculture in a global economy, and consider the impacts of emerging technologies, international trade and environmental issues on industry practice.

SCOPE AND SEQUENCE — AGRICULTURE

INTRODUCTORY	INTERMEDIATE	ADVANCED	THEME
Agriculture: Getting the Big Picture		Global Issues in Agriculture	Social and Cultural Perspectives
From Producer to Consumer	Animal Husbandry and Health Care	Ethics in Agriculture and Food Production	
Production Basics	Field, Nursery and Greenhouse Crops I (Materials and Processes)	Field, Nursery and Greenhouse Crops II (Management Techniques)	Technology and Applications
	Livestock, Poultry and Animal Specialties I (Materials and Processes)	Livestock, Poultry and Animal Specialties I (Management Techniques)	
Consumer Products and Services	Agrifoods I (Materials and Processes)	Agrifoods II (Management Techniques)	
	Landscape and Turf Management I (Materials and Processes)	Landscape and Turf Management II (Management Techniques)	
	Pets and Equine I (Materials and Processes)	Pets and Equine II (Management Techniques)	
	Floristry I (Materials and Processes)	Floristry II (Management Techniques)	
Marketing Fundamentals	Marketing I (General Principles)	Marketing II (Specialized Applications)	
Applications of Agriculture Technology	Controlled Growing Environments	Applications of Biotechnology	
Resource Management and Conservation		Water Management	Management and Conservation
	Soils Management I	Soils Management II	
	Integrated Pest Management	Environmental Conservation and Consequences	

—— Prerequisite - - - - Recommended prerequisite or corequisite

MODULE DESCRIPTIONS

Module AGR101: Agriculture: Getting the Big Picture
Students demonstrate knowledge of the diversity and significance of agriculture, and identify career paths within the industry.

Module AGR102: From Producer to Consumer
Students research and describe the range of activities involved in producing, processing, transporting and marketing an agricultural or horticultural product.

Module AGR103: Production Basics
Students demonstrate basic steps involved in growing a plant or raising an animal commodity, and identify related career paths.

Module AGR106: Consumer Products and Services
Students demonstrate basic steps involved in developing an agriculture product or providing a related service, and identify related career paths.

Module AGR109: Marketing Fundamentals
Students explain basic principles involved in marketing a plant or animal product or service, and identify related career paths.

Module AGR110: Applications of Agriculture Technology
Students describe applications of research and technology within an agriculture or horticulture industry.

Module AGR111: Resource Management and Conservation
Students describe practices used to manage water, soil and land use, and present the results of research on one or more related issues in agriculture.

Module AGR202: Animal Husbandry and Health Care
Students apply principles of animal science and health technology in providing care for a domestic animal.

Module AGR203: Field, Nursery and Greenhouse Crops I
Students apply knowledge of materials and processes in growing a field, nursery or greenhouse crop, focusing attention on plant anatomy and identification, growth requirements, physical structures and equipment, and related career opportunities.

Module AGR204: Livestock, Poultry and Animal Specialities I
Students apply knowledge of materials and processes in raising livestock, poultry or other animal commodities, focusing attention on anatomy and identification, health and nutrition, physical structures and equipment, and related career opportunities.

Module AGR205: Agrifoods I
Students demonstrate knowledge of materials and processes used in producing an agrifood product or providing a related service, focusing attention on industry inputs, processing technologies and practices, and related career opportunities.

Module AGR206: Landscape and Turf Management I
Students demonstrate knowledge of materials and processes used to provide landscape and turf management services, focusing attention on plant identification, equipment and supplies, basic landscape maintenance and related career opportunities.

Module AGR207: Pets and Equine I
Students demonstrate practical skills and approved practices in providing care for a domestic animal for purpose of pleasure, performance or companionship. The module focuses attention on anatomy, taxonomy and genetics, handling and care techniques, health and nutrition, and related career opportunities.

Module AGR208: Floristry I
Students demonstrate knowledge of materials and processes used to construct floral designs and interior plantscapes, focusing on plant and flower identification. simple floral arrangements and indoor plantscapes, and related career opportunities.

Module AGR209: Marketing I
Students apply knowledge of general marketing principles within the context of an agriculture or horticulture industry, focusing attention on materials and services offered to the consumer, marketing techniques and related career opportunities.

Module AGR210: Controlled Growing Environments
Students identify essential components of a controlled growing environment, and demonstrate techniques used to manage the growing environment within a protected structure.

Module AGR212: Soils Management I
Students examine soil formation and classification, conduct tests to determine the physical and chemical properties of soils, and explain the impact of soil properties on productivity.

Module AGR213: Integrated Pest Management
Students apply knowledge of biological, cultural and chemical pest-control measures within the context of an agriculture, horticulture or forest industry.

Module AGR301: Global Issues in Agriculture
Students analyze a range of issues in agriculture, and develop strategies for dealing with agriculture issues within a global context.

Module AGR302: Ethics in Agriculture and Food Production
Students identify a range of ethical concerns relevant to agriculture and food production, analyze different points of view regarding agriculture technologies, and clarify a personal position on an ethical issue in agriculture.

Module AGR303: Field, Nursery and Greenhouse Crops II
Students demonstrate techniques used to manage production of field, nursery or greenhouse crops, focusing attention on enterprise selection, taxonomy and genetics, production management and industry trends.

Module AGR304: Livestock, Poultry and Animal Specialties II
Students demonstrate techniques used to manage production of livestock, poultry or other animal commodities, focusing attention on enterprise selection, genetics and reproduction, production management and industry trends.

Module AGR305: Agrifoods II
Students demonstrate knowledge of techniques used to manage the development of an agrifood product or related service, focusing attention on government regulation and control, economic principles, product quality and safety, environmental impact and industry trends.

Module AGR306: Landscape and Turf Management II
Students demonstrate techniques used to manage landscape and turf management services, focusing attention on plant taxonomy, equipment maintenance, effective landscape practices, cost estimates and pricing.

Module AGR307: Pets and Equine II
Students demonstrate techniques used to manage an animal boarding or training facility, focusing attention on the care and use of physical facilities, husbandry and training skills, health and reproductive technologies, and record keeping systems.

Module AGR308: Floristry II
Students demonstrate knowledge of the practices involved in providing floral design and interior plantscape services, focusing attention on design elements, interior plant care, floral services and marketing practices.

Module AGR309: Marketing II
Students explain specialized applications of marketing within an agriculture or horticulture industry, focusing attention on regulatory structures and policies that influence supply of a commodity, product or service.

Module AGR310: Applications of Biotechnology
Students present the results of research on applications of biotechnology in agriculture and food production.

Module AGR311: Water Management
Students explain principles of water management, and establish appropriate water management practices for an agriculture or horticulture enterprise.

Module AGR312: Soils Management II
Students demonstrate knowledge of appropriate soil testing and amending techniques, and interpret soil survey maps and reports.

Module AGR313: Environmental Conservation and Consequences
Students examine the impact of a range of plant and animal production practice on the environment, and propose strategies for ensuring the sustainable use of natural resources.

PLANNING FOR INSTRUCTION

CTS provides increased opportunity for junior and senior high schools to design courses based on the needs and interests of their students and the circumstances within the school and community. Some strands may be appropriately introduced at the junior high school level. Other strands are more appropriately introduced at the senior high school level or to Grade 9 students. Refer to pages C.3 and C.4 of this Guide for recommendations regarding the Agriculture strand, or the *CTS Manual for Administrators, Counsellors and Teachers* for a summary of the recommended grade levels for each strand.

PLANNING FOR CTS

Defining Courses

Schools determine which strands and modules will be offered in a particular school, and will combine modules into courses.

Each module was designed for approximately 17 to 25 hours of instruction. However, this time frame is only a guideline to facilitate planning. The CTS curricula are competency based, and the student may take more or less time to gain the designated competencies within each module.

A course will usually consist of modules primarily from the same strand but, where appropriate, may include modules from two or more strands. Refer to the *CTS Manual for Administrators, Counsellors and Teachers* for more information on course names and course codes.

Module selection and sequencing must consider the module parameters, which define:

- prerequisite and corequisites (entry-level competencies)
- instructional qualifications, if specialized
- equipment and facility requirements, if specialized.

The module parameters are defined for each module in Sections D, E and F of this Guide.

Degree of Flexibility

The CTS program, while designed using the modular structure to facilitate flexible time tabling and instructional delivery, does not mandate the degree of flexibility a school or teacher will offer. The teacher and school will determine the degree of flexibility available to the student. Within the instructional plan established by the school, the student may:

- be given the opportunity to progress at a rate that is personally challenging
- have increased opportunity to select modules that develop competencies he or she finds most relevant.

Integrating Basic Competencies

Basic competencies are also developed throughout the CTS program and within each module. Selected basic competencies will be emphasized within a module, depending on the nature of the career-specific competencies defined for the module.

Refer to the Assessment Tools section of this Guide for the description of student behaviours expected at each of the three developmental levels defined for the basic competencies.

Assessment of basic competencies could include input and reflection from the student, teacher, peers and workplace supervisors. Description of the observed behaviour could be provided through a competency profile for the module. Positive, ongoing interaction between the student and teacher will support motivation for student growth and improvement.

No mark would be assigned to the student's performance in the designated basic competencies, although a description of the level of performance should be included within the assessment of each module.

Assessing Student Achievement

Assessing the student's competency is a process of gathering information by way of observations of process, product and student interaction.

Where appropriate, assessment tools have been defined to assist the teacher and student in the assessment. Refer to the Assessment Tools section of this Guide to Standards and Implementation for copies of the various tools (worksheets, checklists, sample questions, etc.).

The relative weighting, or emphasis, for each assessment standard has also been established. The weighting is a guideline to help teachers determine a percentage grade for students.

Recognizing Student Achievement

At the high school level, successful demonstration of the exit-level competencies in a module qualifies the student for one credit. Refer to Section A of this Guide for more detailed information about how curriculum and assessment standards are defined in CTS. Refer to the *CTS Manual for Administrators, Counsellors and Teachers* for more information on how student achievement can be recognized and reported at the school and provincial levels.

Resources

A comprehensive resource base, including print, software and audio-visual, has been identified to support the Agriculture strand. It is intended that these resources will form the basis of a resource centre, encouraging teachers and students to access a wide selection of resources and other information sources throughout the learning process. Unless otherwise noted, these resources are considered to be suitable for both junior and senior high school students.

Authorized resources may be obtained from the Learning Resources Distributing Centre or directly from the publisher or distributor. Refer to the Learning Resources section of this Guide for the complete resource list including curriculum correlations and resource annotations. Additional sources refer to non-commercial or government agencies that offer resources that may be of assistance in this strand.

In addition to the resources, sample Student Learning Guides are available. These samples, designed for individual student or small group use, provide an instructional plan for selected modules and include the following components:

- Why take this module?
- What are the entry-level competencies?
- What are the exit-level competencies?
- What resources may be accessed?
- What assignments/activities must be completed?
- What are the time lines?
- How will the final mark be calculated?

Sample Student Learning Guides have been developed for the following modules in Agriculture:

- Production Basics
- Consumer Products and Services
- Field, Nursery and Greenhouse Crops I
- Field, Nursery and Greenhouse Crops II
- Agrifoods I
- Landscape and Turf Management I
- Landscape and Turf Management II
- Floristry I
- Floristry II
- Applications of Biotechnology.

Copies of these sample learning guides can be obtained, by request, from the CTS Unit in print and/or disk format (Microsoft Word).

PLANNING FOR AGRICULTURE

The following suggestions are provided to assist teachers and school and school system administrators as they plan to deliver modules from the Agriculture strand.

Selecting Modules

The scope and sequence chart, page B.3, provides an overview of the Agriculture modules, indicating prerequisites and theme areas. Brief descriptions of the modules are on pages B.4 to B.6.

Course planning should take into consideration module sequences that link with both physical and human resources present in the school and community. Although not required, it is recommended that AGR101: Agriculture: Getting the Big Picture be a prerequisite/corequisite to all modules in the agriculture strand.

Two sample courses, based on introductory level modules and designed to be delivered to junior high school students, are outlined below.

Sample A: 50 hours of instruction

COURSE EMPHASIS
Introduction to Agriculture
MODULES
Agriculture: Getting the Big Picture (AGR101) From Producer to Consumer (AGR102)
RATIONALE/KEY LEARNINGS
Students develop an understanding of the diversity and significance of agriculture, and examine the range of activities involved in producing, processing and marketing an agricultural/horticultural product. The course complements the junior high science and social studies programs, and can be linked with other CTS strands including Foods and Mechanics.

Sample B: 75 hours of instruction

COURSE EMPHASIS
Agriculture/Horticultural Production
MODULES
Production Basics (AGR103) Marketing Fundamentals (AGR102) Resource Conservation and Management (AGR111)
RATIONALE/KEY LEARNINGS
Students develop practical skills involved in growing a plant or raising an animal commodity, examine basic principles related to marketing the commodity, and research practices used to manage water, soil and land use in production activities. The course complements the junior high science and social studies programs, and can be linked with other CTS strands including Management and Marketing, Mechanics and Wildlife.

Three sample courses, based on intermediate and advanced level modules and designed to be delivered to senior high school students, are outlined below.

Sample C: 75 hours of instruction

COURSE EMPHASIS
Beginning Floristry and Plantscape (no previous experience)
MODULES
Consumer Products and Services (AGR106) Floristry I (AGR208) Marketing II (AGR209)
RATIONALE/KEY LEARNINGS
Students demonstrate practical skills used to construct floral designs and interior plantscapes, and examine techniques for marketing these services to the consumer. This course can be linked with other CTS strands including Career Transitions, Design Studies, Enterprise and Innovation, Financial Management, and Management and Marketing.

Sample D: 100 hours of instruction

COURSE EMPHASIS
Livestock Production (assuming junior high transition)
MODULES
Animal Husbandry and Health Care (AGR202) Livestock, Poultry and Animal Specialties I (AGR204) Controlled Growing Environments (AGR210) Applications of Biotechnology (AGR310)
RATIONALE/KEY LEARNINGS
Students apply principles of animal science and health technology in raising livestock, demonstrate techniques used to maintain confinement structures, and research application of biotechnology in the livestock industry. The course can be linked with other CTS strands including Career Transitions, Construction Technologies, Enterprise and Innovation, Financial Management, Forestry, Management and Marketing, and Mechanics.

Sample E: 125 hours of instruction

COURSE EMPHASIS
Nursery Crop Production (assuming junior high transition)
MODULES
Field Nursery and Greenhouse Crops I (AGR203) Marketing I (AGR209) Soils Management (AGR212) Integrated Pest Management (AGR213) Water Management (AGR311)
RATIONALE/KEY LEARNINGS
Students develop practical skills required for the sustainable production of nursery crops, and examine techniques used to market nursery products. This course can be linked with other CTS strands including Career Transitions, Enterprise and Innovation, Financial Management, Forestry, Management and Marketing, and Mechanics.

Planning for Instruction

A "learn by doing" approach to instruction is recommended for the Agriculture strand. Essentially, the teacher's role will become that of guide and partner in the learning process. The "learn by doing" approach requires the teacher to be facilitator and coach, rather than subject-based expert, as students actively participate in learning by doing and discovering.

Small group instruction is a good way to foster learning by doing and discovering. Small groups enable students to be active participants in learning, and develop independent and responsible learning habits. As students work in small group situations they will share information, solve problems, develop consensus, and help each other learn content and processes.

The community is a major stakeholder in education and can be an effective partner in the learning process. The use of community members and resources should be integrated into plans for instruction. Business, industry and government agencies offer a wide range of services and resources, as do local clubs, service groups and institutions. When planning for the use of community resources, teachers should ensure that related presentations and/or activities:

- are consistent with student knowledge and skill levels
- demonstrate sound pedagogy
- are exemplary of approved health and safety standards
- provide a balanced approach to curriculum topics and related issues.

Plans for instruction must address both economic and environmental aspects of agriculture. Provide opportunities for students to become involved in learning experiences that reflect a broad understanding of related issues and concerns. Presentations of course content that reflect a singular or narrow view of economic or environmental concerns are not consistent with learner expectations and must be avoided. For clarification of policy in this regard, refer to Alberta Education's Policy on Controversial Issues in the *Alberta Education Policy Manual* (1989).

As in all CTS strands, students will identify, explore and prepare for future career opportunities. It is recommended that course planning include the integration of relevant career investigations throughout each module, rather than as a singular or isolated study. Career profiles and interviews will acquaint students with the many technical and professional careers associated with the agriculture industry.

Addressing Safety in Off-campus Excursions

Outdoor trips and field excursions are recommended and should be an important part of teaching and learning throughout the Agriculture strand. Safety must be a prime consideration in planning off-campus learning experiences. Both teachers and students should engage in activities commensurate with their level of training and ability. Adequate instructional support, guidance and supervision must be provided at all times. Local jurisdiction and school policies must be understood by principals, teachers, parents, supervisors and students.

Preparation and Risk Anticipation

The preparation stage is the most important part of any off-campus excursion. At this stage of planning, potential risks can be anticipated and either avoided or moderated. The preparation stage should focus attention on:

- trip administration, including the use of parental permission forms, health information forms, school/system authorization forms and accident report forms
- a review of laws and regulations relevant to the excursion and activities that will be undertaken
- study of the area in which the trip is being conducted, and the identification of potential hazards and risks
- determination of group size and the level of supervision that will be required (i.e., supervisor/student ratio)
- a briefing of parents, school administrators, park authorities or others who should be informed in the event of an accident regarding itineraries, participants and emergency response plans
- pre-trip logistics, including transportation, equipment, facility and departure date considerations
- student preparation, including background knowledge and experience, medical problems and/or needs, mental and physical preparedness, and training in specific skill areas.

On-site Risk Management

Safety and risk management involves exercising situation-specific judgment throughout the course of an off-campus excursion. Judgment is the product of experience, and may include recognizing factors such as deteriorating weather, a decline in physical strength, or a more challenging task. Many of the hazard

recognition skills can be taught in the classroom in the preparation stage.

A significant aspect of on-site risk management is group management. Teachers can exercise appropriate group management strategies by focusing attention on:

- pacing, including speed of travel, rest stops, distance travelled and fitness level of students
- group control, including position of leader, regrouping procedures, signal systems and buddy systems
- the establishment of group rules and norms
- clearly defined task allocations for each student
- objective hazard recognition in the field, including weather, terrain, flora and fauna
- subjective hazard recognition in the field, including level of group energy and level of cooperation.

Emergency Response

If students have been well prepared for an off-campus excursion and appropriate group management strategies exercised, the teacher will have maximized opportunities for effective response to an emergency situation. An effective emergency response action plan should include consideration of:

- a suitable approach to the accident site
- first-aid supplies and techniques
- a strategy for signalling assistance
- an evacuation plan
- external assistance procedure
- group management throughout the emergency situation.

Identifying Linkages

Section H of this Guide describes linkages within CTS and with core and complementary programs.

Note that project modules from the Career Transitions strand may be combined with modules from Agriculture to provide increased opportunity for students to develop expertise and refine their competencies.

Improving Smooth Transitions to the Workplace and/or Post-secondary Programs

Refer to Section H of this Guide for potential transitions students may make into the workplace and/or related post-secondary programs or other avenues for further learning.

MODULE CURRICULUM AND ASSESSMENT STANDARDS
INTRODUCTORY LEVEL

The following pages define the curriculum and assessment standards for the introductory level of Agriculture.

Introductory level modules help students build daily living skills and form the basis for further learning. Introductory modules are developed for students who have no previous experience in the strand.

Module learner expectations define the competencies a student must demonstrate to achieve success in a module. Assessment standards define the conditions and criteria to be used for assessing the competencies defined in the module learner expectations. These assessment standards and the accompanying assessment tools are in draft form and will be validated from 1994 to 1996.

Specific learner expectations provide a detailed framework for instruction and help students build the competencies defined in the module learner expectations. Additional information and suggestions for instruction are provided in the Notes column; teachers may wish to use this space to record their ideas for instruction or student projects.

Module AGR101:	Agriculture: Getting the Big Picture	D.3
Module AGR102:	From Producer to Consumer	D.7
Module AGR103:	Production Basics	D.11
Module AGR106:	Consumer Products and Services	D.15
Module AGR109:	Marketing Fundamentals	D.17
Module AGR110:	Applications of Agriculture Technology	D.19
Module AGR111:	Resource Management and Conservation	D.23

MODULE AGR101: AGRICULTURE: GETTING THE BIG PICTURE

Level: **Introductory**

Theme: **Social and Cultural Perspectives**

Prerequisite: **None**

Module Parameters: **Access to rural and/or urban agriculture industry**

Students demonstrate knowledge of the diversity and significance of agriculture, and identify career paths within the industry.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• describe the diversity of agricultural activity in Alberta, Canada and the global community	• three or more **examples** of: – urban and rural production operations – processing systems and value-added products – marketing and distribution systems – business and labour providing inputs and services – community services and government agencies serving agriculture	30
• explain the economic, environmental and social and significance of agriculture	• **statements** of how agricultural activity has affected social and cultural values, environmental factors and economic viability within the local community • **interpretation** of two or more current news articles regarding the impact of personal choices (food, clothing and lifestyle) on the agriculture industry • five or more **predictions** about future trends in agriculture. Predictions to address consumer needs and wants, changing world markets, developments in technology and environmental stewardship	40
• research career clusters within the agriculture industry	• a **report** on one or more career clusters in agriculture/ horticulture. Report to include information about: – nature of the job/working conditions – entry requirements/competencies – educational/training opportunities – opportunity for self-employment and entrepreneurship	30

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • demonstrate effort to develop basic competencies.	*Assessment of student achievement will be based on:* • observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing learning – managing resources – communication *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
	The student should:	
Diversity	• explain the function of subsistence agriculture and commercial agriculture	Research how grain was first planted for domestic use.
	• compare agricultural activities in rural and urban areas; e.g., – scale of industry – labour requirements – type of commodity produced – market opportunities – degree of mechanization	Visit a Farmers' Market. Consider diversity of agriculture that is evident through products being sold.
	• describe production and consumption patterns of agricultural products at local, national and international levels	Use world maps to show food production/ consumption patterns.
	• identify evolving and emerging forms of agriculture that have potential to provide aesthetic, emotional, economic and health benefits; e.g., – food and textiles – industrial applications – greenhouse production – interior plantscape and landscape – animal husbandry and health care	Survey local area to determine plants/ animals grown for food. Prepare a display featuring these plants/animals.
	• identify business/labour that provides inputs and services to agriculture	Invite government and/or industry resource persons to explain their role in agriculture.
	• describe the function of community services and government agencies serving agriculture.	

Concept	Specific Learner Expectations	Notes
	The student should:	
Economic, Environmental and Social Significance	• relate consumer needs and wants to a rationale for the exchange of agricultural goods and services at local, national and global levels	Investigate relationships between production and consumption patterns.
	• describe the exchange of agricultural goods and services between Canada and other nations, and its impact on the national economy	Scrapbook of historical trends in production of a commodity/product.
	• assess the impact of agriculture on quality of life factors; e.g., – rural and urban development – sustainable food supply – use of natural resources – lifestyle	Compare the economic significance of two agriculture industries in Alberta.
	• define sustainable agriculture production	
	• explain the importance of sustainable production systems in meeting societal needs for food and other amenities, conserving natural resources and enhancing the quality of the environment	Research the impact of agriculture on ecosystems.
	• assess the impact of choices and decisions made by citizens on the agriculture industry; e.g., – selection of foods and textiles – use of land and/or chemicals – concern for animal welfare – support given to development and research.	Keep journal of media articles regarding consumer influences on agriculture industries.
Career Clusters	• outline career clusters and the range of occupational opportunities within the agriculture/horticulture industry; e.g., – production science and management – processing (food/fibre/industrial/horticultural) – marketing, distribution and retail services – support services – resource management	Interview community members regarding involvement in agriculture. Comprehensive lists of agriculture-related careers.
	• compare career opportunities in rural and urban areas	
	• gather employment statistics for one or more career clusters; e.g., – types of careers – number of workers – employment trends	Contact "Careers Hotline" (telephone: 1–800–661–3753).

Concept	Specific Learner Expectations	Notes
Career Clusters (continued)	*The student should:* • predict career opportunities and trends from employment statistics • gather information regarding agriculture/horticulture industries in the future, and resulting career opportunities.	Individual/group research and presentation. See National and provincial Occupational Classification systems (NOC and POP).

MODULE AGR102: FROM PRODUCER TO CONSUMER

Level: **Introductory**

Theme: **Social and Cultural Perspectives**

Prerequisite: **None**

Module Parameters: **Access to an agriculture or horticulture industry**

Students research and describe the range of activities involved in producing, processing, transporting and marketing an agricultural or horticultural product.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• identify factors that influence enterprise selection within an agriculture or horticulture industry	• analysis of economic and environmental factors contributing to the success of an agricultural or horticultural enterprise	20
• describe the sequence of steps required to produce a plant or animal product	• a **flow chart** that illustrates stages in the production, processing and marketing of an agricultural or horticultural commodity • a **list** of the range of careers, occupations and networks involved in producing, processing and marketing a plant or animal commodity	40
• research potential markets and marketing systems for an agricultural or horticultural product or service	• an **explanation** of an existing approach used to market an agricultural or horticultural product	20
• explain how consumer markets are expanded and an existing product is altered to meet the needs of new markets.	• **presentation of a plan** for expanding market opportunities, altering an existing agricultural or horticultural product, or developing a new product.	20

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • demonstrate effort to develop basic competencies.	*Assessment of student achievement will be based on:* • observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing learning – communication – teamwork, leadership and service. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Enterprise Selection	*The student should:* • identify economic factors involved in enterprise selection; e.g., – access to, size and location of markets – labour requirements – land requirements – transportation requirements – fixed and variable costs	Enterprise selection may also be influenced by: • tradition • available technology • energy supplies.
	• identify environmental factors that influence enterprise selection within an agriculture or horticulture industry; e.g., – climate – soil and water conditions	Identify materials and services required to support a venture.
	• assess the impact of policy and regulations regarding the use of land, water and air on commodity production; e.g., – land zoning/ownership/tenure – water rights – effluent disposal/use of chemicals.	Case studies.

Concept	Specific Learner Expectations	Notes
Product Networks	*The student should:* • outline the stages and steps involved in producing a plant or animal commodity • classify and sequence the steps required to move the commodity from producer to consumer; e.g., – transportation – processing – grading – packaging – storing – merchandising • identify materials and services that are used at each stage of production, processing and marketing; e.g., – human resources – natural resources – technology – energy – transportation and storage – inspection and regulation.	Prepare flow charts/ diagrams. Identify inputs and output. Examine steps in: • production • processing and packaging • transportation and storage.
Marketing Systems	• describe local, national and international markets for the agricultural or horticultural product • identify relevant marketing alternatives, including free market systems, supply managed systems, marketing boards and/or cooperatives • identify and describe basic steps in marketing the product; e.g., – gathering market information – packaging and labelling – pricing – distribution – advertising and sales.	Prepare a hypothetical marketing strategy. Examine advertisements and explain their appeal. Compare size, form, labelling and visual layout of different packages.
Product Development	• identify factors that influence consumer trends and the development of new markets for an agricultural or horticultural product; e.g., – economic – environmental – social and demographic • identify market opportunities that arise from specialization, international trade and participation in a global economy • explain the steps followed in altering an existing agricultural or horticultural product, or in developing a new product.	Role of consumer references in determining products. Research steps required to patent a process or product.

MODULE AGR103: PRODUCTION BASICS

Level: **Introductory**

Theme: **Technology and Applications**

Prerequisite: **None**

Module Parameters: **Access to a science laboratory and/or land laboratory**

Students demonstrate basic steps involved in growing a plant or raising an animal commodity, and identify related career paths.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• explain the basic steps and procedures involved in growing a plant or raising an animal commodity	• **demonstration of practical skills** in growing a plant or raising an animal commodity. Practical skills to address: – physical growth requirements – a strategy for protecting health – appropriate use of buildings/structures and equipment	75
• research career clusters in agricultural or horticultural production	• a report on one or more career clusters in agricultural or horticultural production. Report to include information about: – nature of the job/working conditions – entry requirements/competencies – educational/training opportunities – opportunity for self-employment and entrepreneurship	25
• demonstrate effort to develop basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing learning – managing resources – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
	The student should:	
Production Practices	• identify physical requirements for the production of a commodity; e.g., – water requirements – light intensity and duration – type of soil – climate and temperature – air – space variables – nutrient requirements	Requirements for germination. Compare nutritional value of various feed sources. Container crops (e.g., tomatoes, beans, cucumbers). Monitor soil moisture and temperature. Compare soil samples. Functions/components of fertilizers.
	• describe a strategy for protecting the health of a chosen commodity; e.g., – identification of diseases, deficiencies and ailments – treatment, control and prevention – ethical concerns	Identify common pests/diseases. Chemical/non-chemical methods of pest and disease control.
	• relate concepts of breeding and selection to production practices; e.g., – systems of breeding – selection criteria – genetic engineering	Identify common breeds/varieties.
	• describe buildings/structures and equipment appropriate to production; e.g., – design features – operation and maintenance – safety – economics/cost	Design/build a hydroponic garden.
	• identify basic business management functions as they relate to production; e.g., – record keeping – handling risk and uncertainty.	Factors in animal health.
Career Clusters	• research career clusters relevant to agricultural or horticultural production; e.g., – science/production management – support services – resource management	Individual/group research and presentation. Interviews.
	• gather employment statistics from one or more career clusters; e.g., – types of careers – number of workers – employment trends	See National and provincial Occupational Profiles (NOC and POP).

Concept	Specific Learner Expectations	Notes
Career Clusters (continued)	*The student should:* • predict career opportunities and trends from employment statistics • gather information regarding agriculture or horticulture production industries in the future, and resulting career opportunities.	Contact the "Career Hotline" (telephone: 1–800–661–3753).

MODULE AGR106: CONSUMER PRODUCTS AND SERVICES

Level: Introductory

Theme: Technology and Applications

Prerequisite: None

Module Parameters: Access to an agriculture processing industry or agriculture service industry

Students demonstrate basic steps involved in developing an agriculture product or providing a related service, and identify related career paths.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• explain the basic steps and procedures involved in developing a consumer product or providing a related service	• **demonstration of practical skills** used to develop an agricultural/horticultural product or provide a related service. Practical skills to address: – identification of inputs to the product or service – demonstration of processes and techniques – safety, quality and environmental control – appropriate use of buildings/structures and equipment	75
• research career clusters in developing agricultural or horticultural products or providing related services	• a **report** on one or more career clusters in the agriculture processing or service industries. Report to include information about: – nature of the job/working conditions – entry requirements/competencies – educational/training opportunities – opportunity for self-employment and entrepreneurship	25
• demonstrate effort to develop basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing learning – managing resources – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Developing Products and Services	*The student should:* • identify steps that are followed in developing a consumer product or providing a related service; e.g., – inputs to the product or service – processes and techniques – safety, quality and environmental control	Prepare flow charts/ diagrams.
	• explain relevant legislation and practices regarding identification, grading, packaging and labelling of the product or service	Practice exercise in grading a commodity.
	• describe strategies for ensuring the quality of the product or service; e.g., – quality indicators – control measures	Consider related health issues.
	• identify appropriate methods for transporting, storing, advertising and/or promoting the product or service	Identify determinants of regional commodity processing.
	• describe buildings/structures and equipment appropriate to providing the product or service; e.g., – design features – operation and maintenance – safety – economics/cost	
	• identify basic business management functions as they relate to the product or service; e.g., – record keeping – risk management.	
Career Clusters	• research career clusters relevant to developing a consumer product or providing a related service; e.g., – food/fibre/industrial/horticultural – support services – resource management	Individual/group research and presentation. Interviews.
	• gather employment statistics from one or more career clusters; e.g., – types of careers – number of workers – employment trends	Contact the "Career Hotline" (telephone: 1–800–661–3753).
	• predict career opportunities and trends from employment statistics	
	• gather information regarding agriculture or horticulture products and services in the future, and resulting career opportunities.	See National and provincial Occupational Profiles (NOC and POP).

MODULE AGR109: MARKETING FUNDAMENTALS

Level: **Introductory**

Theme: **Technology and Applications**

Prerequisite: **None**

Module Parameters: **Access to agriculture marketing facilities**

Students explain basic principles involved in marketing a plant or animal product or service, and identify related career paths.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• explain basic principles involved in marketing an agriculture/ horticulture product or service	• **presentation of a plan** for marketing an agriculture/horticulture product or service. Plan to will address: – commodity supply – potential markets – appropriate marketing alternatives – pricing – packaging and labelling – advertising and promotion – sales and distribution.	75
• research career clusters related to marketing an agricultural/horti-cultural product or service.	• a **report** on one or more career clusters that involve marketing an agricultural/horticultural product or service. Report to include information about: – nature of the job/working conditions – entry requirements/competencies – educational/training opportunities – opportunity for self-employment and entrepreneurship.	25
• demonstrate effort to develop basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing learning – communication – teamwork, leadership and service. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Marketing Principles	*The student should:* • research local, national and international markets for an agriculture/horticulture product or service • distinguish between non-regulated (open) and regulated (closed) marketing systems • identify and compare viable marketing alternatives for the product or service; e.g., – direct producer marketing – open markets – marketing boards – cooperatives • identify factors that influence pricing of the product or service; e.g., – market analysis – supply and demand – cost factors • consider the effectiveness of different types of packaging and labelling; e.g., – for consumer purposes – as a marketing tool • assess the impact of advertising and promotion on personal preferences and consumer decisions.	Factors affecting market demand. Research the role of consumer preferences in determining markets. Visit a supermarket and note grades, date, stamping, etc. Compare methods of packaging. Trends in promotional and marketing strategies. Design/evaluate an approach to marketing.
Career Clusters	• research career clusters related to marketing an agricultural/horticultural product or service; e.g., – market survey – advertising and promotion – distribution and retail services – product development – support services • gather employment statistics from one or more career clusters; e.g., – types of careers – number of workers – employment trends • predict career opportunities and trends from employment statistics • gather information regarding agriculture/horticulture marketing in the future, and resulting career opportunities.	Individual/group research and presentation. Interviews. Contact the "Career Hotline" (telephone: 1–800–661–3753). See National and provincial Occupational Profiles (NOC and POP).

MODULE AGR110: APPLICATIONS OF AGRICULTURE TECHNOLOGY

Level: Introductory

Theme: Technology and Applications

Prerequisite: None

Module Parameters: Access to a construction/fabrication, greenhouse, mechanics and/or science laboratory

Students describe applications of research and technology within an agriculture or horticulture industry.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• explain how research and technology influence the development of agricultural products and services	• examples of at least five altered and two new agricultural products/services developed through applications of technology in the last 20 years. The student will identify the major technology responsible for each product/service	20
• research specific applications of technology in agriculture production, processing or marketing	• the results of research on applications of at least one technology in each of the following categories: – production – processing – marketing	30
• design a simple technology that addresses a current need in agriculture	• a drawing/model of a technological system that addresses an agricultural need. The drawing/model must address: – component parts and principles of operation – efficient use of resources – human and environmental safety *Assessment Tools (to be developed)* *Technology Design, Appendix 1.1*	50
• demonstrate effort to develop basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – being innovative – communication – teamwork, leadership and service. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Technology Impacts	*The student should:* • explain technology as the application of knowledge gained from research to solve practical problems in agriculture • identify and describe different forms of technology used in agriculture; e.g., – machines – planning/monitoring/management processes – new plant and animal species • consider issues and/or conflicts resulting from the adoption of one or more technologies in agriculture; e.g., – economic – political – environmental – health • predict future trends in research and technology based on current challenges facing the agriculture industry • relate specific technologies to current and emerging career paths in the agriculture industry.	Improvements in effectiveness, efficiency and quality of life. Invite local industry and resource persons. Statistical surveys of technology impacts. Energy use. Safety concerns. Comparison of manual and mechanical approaches.
Technology Applications	• describe specific applications of research and technology in plant production; e.g., – field preparation/soil fertility – planting/harvesting – genetic engineering – weed and pest control – propagation – hydroponics – irrigation • describe specific applications of research and technology in animal management and the livestock industry; e.g., – genetic engineering – animal health – hormone-induced yields – electronic management systems – recycled animal wastes – embryo transfer – artificial insemination	Independent/group research and presentation. Predict future production technologies. Invite local veterinarian as a resource person. Provides a good introduction to AGR310: Applications of Biotechnology.

Concept	Specific Learner Expectations	Notes
Technology Applications (continued)	*The student should:* • describe specific applications of research and technology in agriculture processing; e.g., – processing systems – quality control – pollution control – preserving perishable products – packaging and storage • describe specific applications of research and technology in agriculture marketing; e.g., – enterprise budgets – communication – advertising and promotion – commodity sales – product distribution.	Predict future processing technologies. Predict future marketing technologies.
Technology Design	• identify a need/opportunity for designing a technology in agriculture • conduct research regarding the need/opportunity; e.g., – talk to others in order to clarify ideas – consider similar needs and how they were addressed – make reasoned judgments regarding design potential • generate ideas and alternatives regarding the design of a technological machine and/or process to meet the need • select the most appropriate alternative and plan a sequence of tasks to create the technology • make/model the technology by following plans that have been established • assess the design process and technological outcomes in relation to: – original needs and design intentions – efficient use of resources – human and environmental safety • suggest possible improvements to the design process and/or technological outcomes.	Technology as problem solving. Drawing/designing. Constructing models. Effectiveness. Efficiency. Safety in use.

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MODULE AGR111: RESOURCE MANAGEMENT AND CONSERVATION

Level: Introductory

Theme: Management and Conservation

Prerequisite: None

Module Parameters: Access to agriculture industry and government agencies responsible for resource management

Students describe practices used to manage water, soil and land use, and present the results of research on one or more related issues in agriculture.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• describe the nature and extent of Alberta's water resource, and practices for managing its use	• **identification** of geographic areas in Alberta where irrigation is a common agricultural practice • **identification and mapping** of at least four major rivers and four major lakes in Alberta • **descriptions** of at least three water management practices commonly used in Alberta	25
• describe the nature and characteristics of soil in Alberta, and practices for managing its use	• **identification** of the major soil zones in Alberta and the characteristics of each • **interpretation** of at least four soil characteristics that influence agriculture • **descriptions** of at least three soil management practices commonly used in Alberta	25
• examine different uses of land in rural and urban Alberta, and factors upon which land use decisions are made	• **examples** of five rural and five urban land uses • given the physical characteristics of a piece of land, **identification** of one or more appropriate land use options. The student will provide a rationale that addresses personal, production and environmental goals • **consideration** of at least four factors involved in making land use decisions	25
• present the results of research on one or more issues involving water, soil or land use in agriculture	• a **report** on a water, soil or land use issue in agriculture. Report to include: – definition of the issue – stakeholders involved – causal relationships – alternatives/consequences – recommendations	25

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • demonstrate effort to develop basic competencies.	*Assessment of student achievement will be based on:* • observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing learning – managing resources – communication. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
	The student should:	
Water Management	• describe the nature and extent of water resources in different regions of Alberta, and their potential to support agriculture	Water resources will include: • precipitation • surface water • ground water.
	• identify physical, chemical and biological characteristics of water that determine its suitability for use in agriculture	Interpret charts and maps of precipitation. Investigate the water cycle and its role in replenishing water supplies.
	• research techniques used to manage limited and excess water supplies in agriculture; e.g., – irrigation, storage, conservation practices. – diversion, drainage, flood control	Compare effective strategies with ineffective strategies.
	• cite examples of legislation used to manage the water resource in Alberta	Examples: • water rights • pollution control.
	• consider the effects of agricultural practices on water quality	Identify zones in which rainfall is greatest and least in relation to prevailing winds and topography.
	• explain the impacts of limited, excessive or inappropriate water supplies on humans, livestock, crops, wildlife and ecosystems	
	• propose strategies for managing water within a specific rural, urban and/or indoor agriculture environment.	Consider trade-offs in water use.

Concept	Specific Learner Expectations	Notes
Soil Management	*The student should:* • describe the nature and composition of soils present in different regions of Alberta, and their potential to support agriculture • identify physical, chemical and biological characteristics of soil that determine its suitability for use in agriculture • consider the advantages and disadvantages of different management practices; e.g., – chemical treatments, addition of organic material – cultivation, no tillage practices – water conservation practices • explain the impacts of soil quality on crops and livestock • propose strategies for managing soil within a specific rural, urban and/or indoor environment.	Investigate: • soil development process • soil functions • soil zones and classification • mineral, organic, air and water content. Compare different soil types in relation to water retention/ movement. Nutrient cycles. Organic and inorganic nutrients. Cite practices leading to: • erosional losses • nutrient losses. Alternatives in soil management. Prepare and observe compost.
Land Use	• describe different uses of land in rural and urban Alberta; e.g., – resource development – urban development – recreation/protected and natural areas – transportation corridors • define and give examples of multiple use, conservation and sustained yield within the context of water, soil and land use • survey legislation and policies used to manage land in Alberta; e.g., – land zoning/classification – environmental impact assessment • determine appropriate uses for land in agriculture by considering: – soil characteristics and topography – water and climate – market value of products – environmental stewardship.	Research public and private land stewardship agencies. Examine historical changes in land use. Set goals for land use in an area. Identify concerns related to land use: • overgrazing • depletion of moisture/nutrients • soil erosion • removal of natural pest control organisms. Assess alternative uses of a specific land site: • agriculture • wood land • recreation • wildlife habitat • building site.

Concept	Specific Learner Expectations	Notes
Issues in Resource Management	*The student should:* • present the results of research on an issue involving water, soil or land use in agriculture; e.g., – identify major viewpoints and stakeholders – distinguish among facts, opinions and beliefs – outline alternatives and consequences • clarify a position with respect to the issue by analyzing information gathered.	Contact local government agencies. Collect news articles. Computer simulations: • "Sim City" • "Sim Earth" • "Global Effect".

MODULE CURRICULUM AND ASSESSMENT STANDARDS
INTERMEDIATE LEVEL

The following pages define the curriculum and assessment standards for the intermediate level of Agriculture.

> Intermediate level modules help students build on the competencies developed at the introductory level and focus on developing more complex competencies. They provide a broader perspective, helping students recognize the wide range of related career opportunities available within the strand.

Module AGR202:	Animal Husbandry and Health Care	E.3
Module AGR203:	Field, Nursery and Greenhouse Crops I	E.7
Module AGR204:	Livestock, Poultry and Animal Specialities I	E.11
Module AGR205:	Agrifoods I	E.15
Module AGR206:	Landscape and Turf Management I	E.19
Module AGR207:	Pets and Equine I	E.23
Module AGR208:	Floristry I	E.27
Module AGR209:	Marketing I	E.31
Module AGR210:	Controlled Growing Environments	E.35
Module AGR212:	Soils Management I	E.39
Module AGR213:	Integrated Pest Management	E.43

MODULE AGR202: ANIMAL HUSBANDRY AND HEALTH CARE

Level: **Intermediate**

Theme: **Social and Cultural Perspectives**

Prerequisite: **None**

Module Parameters: **A domestic animal and appropriate animal confinement structure**

Students apply principles of animal science and health technology in providing care for a domestic animal.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• describe characteristics of a healthy animal and factors that contribute to a healthy animal environment	• detailed **analysis** of factors that contribute to the health and well-being of a domestic animal. Analysis to address anatomy and physiology, nutrition, housing, sanitation and pest control, methods of handling and restraint, obstetrics and reproduction, sources of stress, normal/abnormal vital signs and behaviours	30
• employ appropriate techniques and technologies in providing care for a domestic animal.	• **demonstration of practical skills** while providing care for a domestic animal. Practical skills will address: – nutritional requirements – space requirements – shelter and confinement requirements – appropriate handling techniques – strategies for monitoring health and well-being	50
• propose a rationale and strategy for addressing animal welfare	• a **survey** of historical concerns for animal welfare • a **comparison** of animal welfare and animal rights • a **plan** for addressing an animal welfare issue. Plan to include: – ethical, economic and social concerns – welfare needs of the animal – current codes of practice – alternatives and consequences – a recommended plan for action	20

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • demonstrate effort to improve basic competencies.	*Assessment of student achievement will be based on:* • observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – ethics – managing resources – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Health Factors	*The student should:* • describe basic animal physiology and anatomy • explain relationships between animal nutrition and the functioning of body systems • describe specific nutrient excesses and/or deficiencies and their impact on animal health • identify agents and sources of stress for animals, and their implications for health • describe characteristics of a healthful animal environment, and conditions that can place an animal's health or safety at risk; e.g., – sanitation – housing – pest control – methods of restraint • explain basic reproduction and obstetrics for a selected animal species, and identify signs of abnormal pregnancy, difficult birth and/or an unhealthy newborn • identify and describe indicators of health in a selected animal species; e.g., – physical signs of good and poor health – normal and abnormal vital signs – symptoms of disease and parasites – normal and abnormal behaviour.	List and describe anatomy systems. Discuss relationships between physiological systems. Suggested resource: "Recommended Code of Practice for the Care and Handling of Farm Animals" (series available from Agriculture Canada). Invite local veterinarian as a resource person.

Concept	Specific Learner Expectations	Notes
Safe Handling and Care	*The student should:* • demonstrate ethical behaviours in providing care for an animal • consider contributions of technology in current animal husbandry and health care practices; e.g., – nutrition – disease prevention and treatment – reproduction and obstetrics – kennel and cage management • explain nutrient requirements, and provide balanced rations in given situations; e.g., – maintenance – growth or fattening – pregnant or lactating mothers • identify shelter needs, and provide/maintain desirable handling and confinement structures • monitor vital signs and examine for disease, parasites and other common ailments • recognize abnormal behaviour, and practise intervention strategies for a sick animal; e.g., – reduce stress – administer emergency first aid – treat/control disease and other ailments – administer medication • provide obstetric care during parturition and post-partum • describe veterinary services that are available, and the protocol for accessing these services.	Design an appropriate environment for a domestic animal. Field trips and job shadowing for first-hand observation of safe handling and care techniques. Invite local veterinarian and/or industry worker as resource person. Research how antibiotics and vaccines work. Given an emergency animal situation, describe appropriate methods of dealing with the emergency.
Animal Welfare	• distinguish between animal welfare and animal rights • explain the importance of maintaining safe domestic and market-driven environments for animals • examine different perspectives regarding an issue in animal welfare; e.g., – ethical – economic – social	Gather relevant news articles. Student debates on animal welfare issues. Identify human attitudes/skills to which animals respond.

Concept	Specific Learner Expectations	Notes
Animal Welfare (continued)	*The student should:* • identify and describe government codes and regulations intended to address animal welfare • identify and describe organizations in the community that address animal welfare • outline a protocol for responding to an animal welfare issue.	Research paper or resource person from Alberta Agriculture, Food and Rural Development. Contact the SPCA or Humane Society.

MODULE AGR203: FIELD, NURSERY AND GREENHOUSE CROPS I

Level: **Intermediate**

Theme: **Technology and Applications**

Recommended Prerequisite: **Production Basics (AGR103)**

Module Parameters: **Land laboratory and/or greenhouse facility**

Field crop specialization could involve study of one or more of the following: cereals, forage, oil seeds, pulse crops, mushrooms, spices/herbs, vegetables, medicinal plants, exotic plants.

Students apply knowledge of materials and processes in growing a field, nursery or greenhouse crop, focusing attention on plant anatomy and identification, growth requirements, physical structures and equipment, and related career opportunities.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• apply knowledge of plant anatomy and identification to field, nursery or greenhouse plants	• **identification** of basic anatomical structures of field, nursery or greenhouse plants, and their function in conducting life processes • **identification** of common species of field, nursery or greenhouse plants suited to specific applications in Alberta	20
• demonstrate practical skills in growing a field, nursery or greenhouse crop	• **practical experiences** in which the student will: – prepare a growing medium/seed bed – propagate a field, nursery or greenhouse crop – cultivate, water and fertilize the crop – control plant pests and diseases	50
• describe structures and equipment used in crop production	• **selection and use** of appropriate structures and/or equipment at each stage of plant production	20
• research career clusters related to field, nursery or greenhouse crop production.	• a survey of one or more career clusters related to field, nursery or greenhouse crop production. Survey to address employment opportunities based on statistics, entry requirements, training programs, potential for self-employment and industry trends.	10

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • demonstrate effort to improve basic competencies.	*Assessment of student achievement will be based on:* • observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing resources – teamwork, leadership and service – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Plant Anatomy and Identification	*The student should:* • describe the structure, function and growth habits of plants; e.g., – roots – stems – leaves – flowers and fruits	Draw, label and list functions of specific plant structures. Prepare models and/or mounts.
	• explain basic plant processes and related terminology; e.g., – water and nutrient intake – respiration – photosynthesis – transpiration	Consult with Science teachers. Demonstrate storage of solar energy in plants.
	• describe methods used to propagate field, nursery or greenhouse plants; e.g., – sexual methods – asexual methods	
	• identify field, nursery or greenhouse plants; e.g., – using common names – using botanical nomenclature	Plant collections and displays.
	• identify plants that are suited to specific applications; e.g., – cereal, forage and oil seed crops – potted and bench-grown greenhouse crops – vegetable and fruit crops – field and container-grown nursery crops – specialty crops.	Prepare/examine microscope slides of plant parts/cross-sections.

Concept	Specific Learner Expectations	Notes
	The student should:	
Production Skills	• identify basic physical requirements for producing a field, nursery or greenhouse crop; e.g., – water – light (quantity, quality, duration) – temperature – air – space variables – nutrients	Design/conduct experiments that monitor the effect of environmental factors on growth.
	• describe how weather and climate may affect production activities	Calculate germination rates.
	• apply principles of nutrition to production practices; e.g., – function and sources of essential nutrients – identifying excesses and deficiencies – fertilizer formulation	Recognize nutrient deficiencies.
	• describe the symptoms, treatment and prevention of major pests, diseases and ailments that affect the health of plants; e.g., – identification, symptoms and treatment – cultural, mechanical, biological and chemical methods of control	Grow plants suitable for sale. Potential linkages with Alberta Agriculture Green Certificate Farm Training Program: • crop production • irrigated crop production.
	• identify policy, legislation and safe practices relevant to propagating and harvesting a field, nursery or greenhouse crop.	
Structures and Equipment	• describe structures used in producing a field, nursery or greenhouse crop; e.g., – fences and cold frames – greenhouses	See "Construction Technologies" (module on agri-structures).
	• identify types of equipment that are used at each stage of production; e.g., – hand and/or power equipment used in seeding/planting, tillage, water/fertilizer application and harvest – handling equipment, such as trucks, tractors, conveyors and augers	
	• consider criteria relevant to the selection and/or design of structures and equipment; e.g., – function, operation and maintenance – safety efficiency – ethical, legal and environmental factors – economics and cost	Design/construct models of structures and equipment.
	• identify policy, legislation and safe practices relevant to the use of structures and equipment.	

Concept	Specific Learner Expectations	Notes
Career Clusters	*The student should:* • research career clusters and the range of occupational opportunities related to producing field, nursery or greenhouse crops; e.g., – primary production – agriscience/production management – resource management – support services • assess current employment opportunities based on employment statistics • gather information regarding trends in field, nursery or greenhouse crop production, and future career opportunities.	Individual/group research and presentation. Consider: • job description • employment markets • education/training • wage expectations. Interviews. Work study/experience. Job shadowing.

MODULE AGR204: **LIVESTOCK, POULTRY AND ANIMAL SPECIALITIES I**

Level: Intermediate

Theme: Technology and Applications

Recommended Prerequisite: Production Basics (AGR103); Workplace Safety Practices (CTR221)

Module Parameters: Livestock, poultry or specialty animals; appropriate animal confinement structures

Because of the practical nature of this module, students must be knowledgeable about accepted practices and potential hazards when performing tasks and chores related to animal production.

Potential areas of specialization include beef, dairy, poultry, swine, sheep, game, exotics, bees, aquaculture.

Students apply knowledge of materials and processes in raising livestock, poultry or other animal commodities, focusing attention on anatomy and identification, health and nutrition, physical structures and equipment, and related career opportunities.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Suggested Emphasis
The student will:	*Assessment of student achievement will be based on:*	
• identify basic anatomical structures, types and breeds of beef, dairy, sheep, swine, poultry or speciality animals	• identifying by name and describing the main function of structural parts of a beef, dairy, sheep, swine, poultry or specialty animal. *Assessment Tool* *Guide to Identification: Anatomical Structures, AGR204-1* • given access to publications on livestock or poultry management, completing all components of a research project on types and breeds of a beef, dairy, sheep, swine, poultry or specialty animal. *Assessment Tool* *Research Process, AGR204-2*	30
• demonstrate practical skills in raising beef, dairy, sheep, swine, poultry or specialty animals	• maintaining a log of production tasks and chores performed involving: – animal handling – care for newborn – feeding practices – basic health care. *Assessment Tool* *Task Checklist: Animal Production, AGR204-3*	50

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Suggested Emphasis
The student will:	*Assessment of student achievement will be based on:*	
• describe structures and equipment used in animal production	• given a range of animal production tasks and chores that involve animal handling, care for newborn, feeding practices and basic health care, describing equipment and/or structures that are required, related techniques for use and potential safety hazards. *Assessment Tool* *Task Checklist: Animal Production, AGR204-3*	10
• research career clusters related to beef, dairy, sheep, swine, poultry or specialty production	• given career information and resources concerning animal production, completing a research project on one or more career clusters related to livestock, poultry or specialty animal production. *Assessment Tool* *Research Process, AGR204-4*	10
• demonstrate effort to develop basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, with emphasis on: – using a variety of learning styles and preferences to acquire and apply information – identifying ethical concerns regarding the care of animals – allocating time, materials and other resources – following safe procedures and eliminating potential hazards. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
Anatomy and Identification	*The student should:* • describe the characteristics and function of major anatomical structures in livestock, poultry or an animal specialty • explain vital life processes and related terminology; e.g., – respiration – digestion – waste excretion – growth – reproduction • identify major classes and breeds of commercial species • describe the desirable characteristics of major classes and breeds • select animal breeds that are suited to specific production and market applications • explain how animal characteristics are passed from generation to generation, and common breeding systems; e.g., – inbreeding – linebreeding – crossbreeding.	Draw, label and list functions of specific anatomical structures. Prepare models. Diagrams of animal digestive system. Cattle and sheep have rumens (4-compartment stomachs), which enable them to digest grass and crop wastes. Dairy cattle producers place emphasis on a cow's udder and milk production records. Beef, hog and meat poultry producers place emphasis on muscling for meat production. Identify specific breeds of animals from pictures/slides. Invite district agriculturalist/ veterinarian as resource person.
Production Skills	*The student should:* • identify basic physical requirements for producing livestock, poultry or specialty animals; e.g., – water and food – light – temperature – air – space variables • describe how weather and climate may affect production activities • explain how land and soil characteristics influence production practices; e.g., – topography – classification and physical features – ground cover and forage potential • explain how water quality and quantity influence production practices	List tasks required to provide proper care for an animal. Potential linkages with Alberta Agriculture Green Certificate Farm Training Program: • Beef • Dairy • Sheep • Swine.

Concept	Specific Learner Expectations	Notes
Production Skills (continued)	*The student should:* • apply principles of nutrition to production practices within the industry; e.g., – essential nutrients – excesses and deficiencies – ration formulation and balancing • determine special nutritional requirements based on growing, fattening, nursing or other production factors • describe the symptoms, treatment and prevention of major pests, diseases and ailments that affect the health of animals within the industry; e.g., – identification, symptoms and treatment – cultural, mechanical, biological and chemical methods of control • demonstrate accepted methods of handling and restraining animals • identify policy, legislation and safe practices relevant to raising livestock, poultry or specialty animals.	Flow charts illustrating ration formulation. Develop chart indicating food ingredients needed by an animal. Compare feeding systems. Consider use of: • drug administration • vaccination • feed additives. Examine the role of veterinary services. Research herd health factors and considerations.
Structures and Equipment	*The student should:* • describe structures used in producing livestock, poultry or specialty animals; e.g., – fences and shelters – totally confined rearing structures • describe methods of cleaning and disinfecting trailers, pens and other animal holding structures • identify types of equipment that are used at each stage of production within the industry; e.g., – hand and/or power equipment used in maintaining health and nutrition – handling equipment, such as trucks, conveyors and augers • consider criteria relevant to the selection and/or design of structures and equipment; e.g., – function, operation and maintenance – safety and efficiency – ethical, legal and environmental factors – economics and cost • identify policy, legislation and safe practices relevant to the use of structures and equipment within the industry.	Illustrate a facility for a specific number of one type of livestock. Construct models of fences, gates, corrals, etc., suited to a specific animal. Design/construct models of structures and equipment. Picture collection of various types of animal shelters. See Construction Technologies module on agri-structures (CON210).

Concept	Specific Learner Expectations	Notes
Career Clusters	• research career clusters and the range of occupational opportunities related to producing livestock, poultry or animal specialties; e.g., – primary production – agriscience/production management – resource management – support services • assess current employment opportunities based on employment statistics • gather information regarding trends in livestock, poultry or specialty production, and future career opportunities.	Individual/group research and presentation. Consider: • job description • employment markets • education/training • wage expectations. Interviews. Work study/experience. Job shadowing.

MODULE AGR205: **AGRIFOODS I**

Level: **Intermediate**

Theme: **Technology and Applications**

Recommended Prerequisite: **Consumer Products and Services (AGR106)**

Module Parameters: **Access to an agrifoods industry**

Potential areas of investigation include dairy, beef, pork, poultry, cereals, oil seeds, sugar beets, wine, fruit/vegetables, honey.

Students demonstrate knowledge of materials and processes used in producing an agrifood product or providing a related service, focusing attention on industry inputs, processing technologies and practices, and related career opportunities.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Suggested Emphasis
The student will:	*Assessment of student achievement will be based on:*	
• describe the range of input materials, food products and/or related services characteristic of an agrifood industry	• given access to information and resources concerning an agrifood industry, preparing a written, oral or visual report on inputs to processing within the industry, and products and services provided by the industry. *Assessment Tool* *Presentations/Reports, AGR205-1*	20
• explain technologies and practices used in processing an agricultural food product or providing a related service	• given access to information and resources concerning an agrifood industry, preparing a portfolio that describes and explains technologies and practices used within the industry. *Assessment Tool* *Portfolio: Agrifoods Industry Profile, AGR205-2*	60
• research career clusters within an agrifood industry	• given career information and resources concerning an agrifood industry, completing a research project on one or more career clusters within the industry. *Assessment Tool* *Research Process, AGR205-3*	20

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Suggested Emphasis
The student will: • demonstrate effort to develop basic competencies.	*Assessment of student achievement will be based on:* • observations of individual effort and interpersonal interaction during the instructional period, with emphasis on: – using a variety of learning styles and preferences to acquire new information and apply knowledge – allocating time, materials and other resources – preparing and presenting accurate and concise written, visual and/or oral reports – participating as a member of a team by working cooperatively with other and contributing ideas, suggestions and effort. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
Nature of the Industry	*The student should:* • describe the products and/or services produced by an agrifood industry • describe inputs to processing within the industry; e.g., – commodity inputs/raw materials – financial resources – human and natural resources – technology • explain supply management systems that may affect supply of raw materials to the industry; e.g., – government regulations – board management systems • identify environmental factors that affect the viability of the processing industry; e.g., – water – land and soil – weather and climate.	Individual/group research and presentation. Prepare glossary of industry terms. Contact Alberta Food Processors' Association.

Concept	Specific Learner Expectations	Notes
	The student should:	
Processing Techniques	• explain the stages and steps in processing the commodity and providing the value-added product and/or service	Construct flow charts/ diagrams.
	• explain applications of technology in processing the commodity and providing the value-added product and/or service	
	• explain the need for quality control within the processing industry; e.g., – testing/inspection of raw materials – product quality and uniformity	Suggested video *On the Line* (deals with quality control in cheese production).
	• explain systems used to grade products within the industry	
	• describe methods of preserving perishable products within the industry; e.g., – blanching and canning – dehydration and freeze-drying – fermentation – refrigeration and freezing – atmosphere control – food additives	Examine the effect of temperature and packaging on shelf life and quality of a product.
	• product packaging and labeling practices within the industry	
	• describe transportation and storage practices within the industry, and their impact on industry location and product costs	Draw a map showing the influence of transportation/storage on industry location.
	• describe buildings/structures and equipment used in processing, transportation and storage; e.g., – design features – operation and maintenance – safety standards – economics/cost	Design/construct models of structures and equipment.
	• identify safety concerns, regulations and standards within the industry.	

Concept	Specific Learner Expectations	Notes
Career Clusters	*The student should:* • research career clusters and the range of occupational opportunities related to processing an agricultural commodity or providing a value-added product/service; e.g., – processing – business/sales – communications – research and development – quality assurance – transportation – education • assess current employment opportunities based on employment statistics • gather information regarding trends in the agrifood industry and future career opportunities.	Consider: • job descriptions • employment market • education requirements • wage expectations. Individual/group research and presentation. Interviews. Work study/experience. Job Shadowing.

MODULE AGR206: LANDSCAPE AND TURF MANAGEMENT I

Level: **Intermediate**

Theme: **Technology and Applications**

Recommended Prerequisite: **Consumer Products and Services (AGR106)**

Module Parameters: **Access to a residential, recreational or industrial/institutional landscaped area**

Potential areas of specialization include home landscapes, golf courses, recreational fields and parks, institutional/industrial grounds, roadside landscapes.

Students demonstrate knowledge of materials and processes used to provide landscape and turf management services, focusing attention on plant identification, equipment and supplies, basic landscape maintenance and related career opportunities.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • identify plants suitable for use in Alberta landscapes	*Assessment of student achievement will be based on:* • **recognition** of the general characteristics and functional uses of basic plant groups used in landscaping, including trees, shrubs, ground covers, flowers and turfgrasses • **identification** of at least 30 different trees, shrubs, ground covers, flowers and/or turfgrasses used for landscaping in Alberta • **identification** of at least 10 common weeds found in Alberta landscapes and turfgrasses	20
• identify and describe equipment and materials commonly used in landscape practices	• **operation and use** of hand and power equipment commonly used in landscape maintenance, including equipment within at least three of the following categories: – planting and transplanting tools – cultivating and aerating equipment – thatch removing and raking equipment – mowing equipment – irrigation equipment – pruning and trimming equipment – chemical and fertilizer applicators *Assessment Tools (to be developed)* *Power Machines, Appendix 2.1* • **identification** of organic and inorganic materials commonly used in landscape maintenance, including growing media, fertilizers and pesticides	20

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • demonstrate practical skills used to maintain landscape plants and turfgrasses	*Assessment of student achievement will be based on:* • **demonstration of practical skills** used to maintain landscape plants and turfgrasses. Practical skills to include: – irrigation and fertilization of plants and turf – cultivation and mulching of plants – corrective pruning of plants – mowing, trimming and edging of turfgrass – removal of dead and diseased plant materials – control of weeds, disease and pests *Assessment Tools (to be developed)* *Corrective Pruning, Appendix 2.2; Landscape Service, Appendix 2.3; and Horticulture Work Ethic, Appendix 2.4*	50
• research career clusters related to landscape and turf management	• a survey of one or more career clusters related to landscape and turfgrass management. Survey to address employment opportunities based on statistics, job descriptions, entry requirements, training programs, potential for self-employment and industry trends	10
• demonstrate effort to improve basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing resources – teamwork, leadership and service – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies.*	No mark

Concept	Specific Learner Expectations	Notes
Plant Identification	*The student should:* • describe the general characteristics and functional uses of basic plant groups used in landscaping; e.g., – trees – shrubs – ground covers and vines – flowers – turfgrasses	Create a pictorial display of basic types of landscape plants.

Concept	Specific Learner Expectations	Notes
Plant Identification (continued)	*The student should:* • explain criteria used to identify individual plant species; e.g., – plant height and shape – leaf structure and colour – flower or fruit characteristics • identify common tree, shrub, ground cover, flower and turfgrass species used for landscaping in Alberta • distinguish between native and exotic trees, shrubs and ground covers • distinguish between bedding and seed flowers.	Identify at least 30 different landscape plants. Potential linkages with "Landscape Gardener Apprenticeship Training Program".
Equipment and Materials	• identify and describe hand and power equipment commonly used in landscape maintenance; e.g., – planting and transplanting tools – cultivating and aerating equipment – thatch removing and raking equipment – mowing equipment – irrigation equipment – pruning and trimming equipment – chemical and fertilizer applicators • calibrate and/or adjust hand and power equipment as required to perform landscape maintenance tasks • identify and describe organic and inorganic materials commonly used in landscape maintenance; e.g., – growing media – fertilizers – pesticides • demonstrate safe procedures for using equipment and materials in landscape maintenance; e.g., – safe practices and potential hazards – protective clothing – safety labels and instructions – government legislation and regulation – emergency first aid.	Practical on-site applications are essential. Follow a set of instructions given as part of a demonstration. Possible power equipment includes: • push mower • lawn tractor • power edger • lawn vacuum • cord trimmer • leaf blower. Possible hand tools include: • hand trimmer • half moon edger • lawn rake • weed puller. CAUTION Completion of safety test PRIOR to demonstration and use of equipment and materials.

Concept	Specific Learner Expectations	Notes
Maintenance Procedures	*The student should:* • describe the cultural requirements of common trees, shrubs, ground cover, flowers and turfgrasses; e.g., – soil – moisture – light – temperature • identify common weeds and insect pests at different stages of growth • compare biological, cultural and chemical control measures for weeds and plant pests • explain safe practices for mixing and applying fertilizers and chemicals • demonstrate practical skills used to maintain landscape plants and turfgrasses; e.g., – irrigate and fertilize plants and turf – cultivate and mulch plants – prune plants – mow and trim turf – remove dead and diseased plant materials – control weeds, disease and pests.	Demonstrate maintenance of planting beds, annuals and perennials. Collect/mount a display of comon weeds. Potential linkages with "Pesticide Applicator/Dispenser Certificate Courses". Contact: • Lakeland College • Olds College. Discuss beneficial/harmful effects of insects. List advantages/disadvantages of several pesticides. Develop weed control program. Collect and examine some diseased plants.
Career Clusters	• research career clusters and the range of occupational opportunities related to landscape and turfgrass management; e.g., – establishment and maintenance • home landscape • golf courses • recreational fields and parks • institutional/industrial grounds • highway and roadside turfgrass – design and construction – equipment maintenance and repair – agriscience/resource management • assess current employment opportunities based on employment statistics • gather information regarding trends in landscape and turfgrass management, and future career opportunities.	Individual/group research and presentation. Consider: • job description • employment markets • education/training • wage expectations. Interviews. Work study/experience. Job shadowing.

MODULE AGR207: PETS AND EQUINE I

Level: **Intermediate**

Theme: **Technology and Applications**

Recommended Prerequisite: **Consumer Products and Services (AGR106)**

Module Parameters: **A domestic animal and appropriate animal confinement structure**

Students demonstrate practical skills and approved practices in providing care for a domestic animal for the purpose of pleasure, performance or companionship. The module focuses attention on anatomy, taxonomy and genetics, handling and care techniques, health and nutrition, and related career opportunities.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• describe the importance, origin and anatomy of a domestic animal	• the results of **research** on a domestic animal. Research to include: – origin and history – social and economic importance – types and breeds – major anatomical structures and their functions	20
• apply knowledge of taxonomy and genetics in identifying the types, breeds and characteristics of a domestic animal	• **identification** of animal types and/or breeds suited to specific applications • a **concept** test in which the student demonstrates knowledge of genetics and heredity principles. Concept tests to address: – dominant and recessive animal traits – selection criteria and procedures – commonly used breeding systems	20
• demonstrate practical skills and approved procedures for animal handling and animal health care	• **practical experiences** in which the student will: – provide basic physical requirements essential to animal care – plan and implement an appropriate feeding program – clean and disinfect confinement structures – control pests, diseases and other ailments – monitor vital signs and recognize abnormalities – use approved methods of handling and restraining the animal	50

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• research career clusters that involve providing care for domestic animals	• a survey of one or more career clusters that involve providing care for a domestic animal. Survey to address employment opportunities based on statistics, entry requirements, training programs, potential for self-employment and industry trends	10
• demonstrate effort to improve basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – ethics – managing resources – teamwork, leadership and service – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
	The student should:	
Origin and Anatomy	• identify different types of benefits associated with a domestic animal; e.g., – pleasure – companionship – performance – breeding	Individual/group research and presentation.
	• describe the origin and history of a domestic animal, and factors that lead to the domestication	
	• describe the characteristics and functions of major anatomical structures	Draw, label and list functions of specific anatomical structures. Prepare models.
	• explain major body systems, processes and related terminology; e.g., – respiration – digestion – waste excretion – growth – reproduction.	Diagrams of animal digestive system.

Concept	Specific Learner Expectations	Notes
Taxonomy and Genetics	*The student should:* • identify and describe selected types and breeds of a domestic animal • identify animal breeds that are suited to specific applications • explain how animal characteristics are passed from generation to generation, and commonly used breeding systems; e.g., – inbreeding – linebreeding – crossbreeding • apply heredity principles to a specific domestic breed; e.g., – dominant and recessive traits – selection criteria and procedures.	Contact breed associations for breed promotion material and guest speakers.
Animal Handling and Health Care	• describe basic physical requirements essential to the care of a domestic animal; e.g., – water and food – light – temperature – air – space variables • describe how weather and climate may affect the animal • explain how land, soil and water characteristics may affect the animal • apply principles of nutrition to a domestic animal; e.g., – essential nutrients – excesses and deficiencies – ration formulation and balancing • assess special nutritional requirements based on growth, performance, pregnancy, nursing or other factors • describe the symptoms, treatment and prevention of major pests, diseases and ailments that affect the animal • monitor vital signs and recognize abnormalities • describe approved methods of handling and restraining the animal • describe approved methods of marking or tagging the animal for identification • identify policy, legislation and safe practices relevant to providing animal care.	Invite a local veterinarian to discuss accepted handling and care techniques. List the tasks required to provide proper care for an animal. Food sources and additives. Flow charts illustrating ration formulation. Develop a chart indicating the food requirements of an animal.

Concept	Specific Learner Expectations	Notes
Career Clusters	*The student should:* • research career clusters and the range of occupational opportunities that involve providing care for domestic animals; e.g., – breeding and production – health sciences/veterinary medicine – sales – stable management – performance training – support services • assess current employment opportunities based on employment statistics • gather information regarding trends in pet and equine care, and future career opportunities.	Individual/group research and presentation. Consider: • job description • employment markets • education/training • wage expectations. Interviews. Work study/experience. Job shadowing.

MODULE AGR208: **FLORISTRY I**

Level: **Intermediate**

Theme: **Technology and Applications**

Recommended Prerequisite: **Consumer Products and Services (AGR106)**

Module Parameters: **Flower arrangement room with refrigeration**

Students demonstrate knowledge of materials and processes used to construct floral designs, focusing on plant and flower identification, simple floral techniques and arrangements, and related career opportunities.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Suggested Emphasis
The student will:	*Assessment of student achievement will be based on:*	
• identify and explain the cultural requirements of indoor plants, cut flowers and foliage	• given access to on-site (or photographed) interior plants, cut flowers and foliage, identifying (using botanical and common names) and stating the basic characteristics of at least 20 different specimens. *Assessment Tool* *Guide Interior Plant and Cut Flower Identification, AGR208-1*	30
	• under management and supervision, and with regard for safety and sanitation: – conditioning fresh cut flowers and greenery for storage – handling dried and fabric flowers and greenery – packaging flowers in sleeves and boxes – packaging gift plants and floral arrangements. *Assessment Tool* *Task Checklist: Floristry I, AGR208-2*	
• design and construct simple floral arrangements	• under management and supervision, and with regard for safety and sanitation: – tying floral bows using ribbon of different widths – wrapping wires of different gauge with floral tape – designing and constructing a single and triple bud vase, a single boutonniere, a triple corsage, a rose bowl, a simple mound arrangement and a triangle arrangement of a dozen roses. *Assessment Tool* *Task Checklist: Floristry I, AGR208-2* *Product Assessment: Floral Arrangements, AGR208-3* *Lab Assessment: Floristry I, AGR208-4*	60

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Suggested Emphasis
The student will:	*Assessment of student achievement will be based on:*	
• research careers within the retail florist industry	• given career information and resources concerning the retail florist industry, completing a research project on one or more career clusters in floristry and interior plantscape. *Assessment Tool* *Research Process, AGR208-5*	10
• demonstrate effort to develop basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, with emphasis on: – thinking critically to evaluate situations, solve problems and make decisions – allocating time, materials and other resources – following safe procedures and recognizing potential hazards. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
Plant and Flower Identification	*The student should:* • identify interior plants and gift plants; e.g., – tropical flowering and foliage plants – flowering bulbs • identify cut flowers and greenery commonly used in floral design; e.g., – greenhouse/fieldgrown cut flowers – imported cut flowers – foliage and filler • describe techniques used to condition fresh cut flowers and greenery for storage • identify dried and artificial materials commonly used in floral design; e.g., – dried flowers and foliage – silk and other fabric materials • describe techniques used to handle and preserve dried flowers and greenery.	Subscribe to *Florists' Review* (monthly periodical). Visit to a local florist shop. Identify at least 20 different flowers and/or gift plants.

Concept	Specific Learner Expectations	Notes
Basic Floral Design	*The student should:* • describe different construction materials used in floral design; e.g., – wire, tape and adhesive – ribbon – holding devices and containers • demonstrate basic construction techniques used in floral design; e.g., – wiring – taping – bow making • relate different growth styles of flowers to their use in floral arrangements • demonstrate basic design techniques used in floral arrangements; e.g., – symmetrical and asymmetrical triangles – vertical and horizontal – circular and oval • describe techniques for the care of perishable floral materials; e.g., – use of water and preservatives – temperature and humidity control – cleanliness and sanitation – methods of packaging • construct a boutonniere, corsage, bud vase and rose bowl • construct a simple floral design using fresh, dried and/or artificial materials.	CAUTION Demonstrate safe use of tools PRIOR to practical activities. Consider design principles: • colour • composition • balance and symmetry • proportion and scale. Practical skills should be demonstrated to industry standards (see "Flowers Canada Accreditation Program").
Career Clusters	• research career clusters and the range of occupational opportunities related to the retail florist industry; e.g., – nursery and greenhouse production – floral design and service – merchandising and marketing • assess current employment opportunities based on employment statistics • gather information regarding trends in floristry, and future career opportunities.	Individual/group research and presentation. Consider: • job description • employment markets • education/training • wage expectations. Interviews. Work study/experience. Job shadowing.

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MODULE AGR209: MARKETING I

Level: **Intermediate**

Theme: **Technology and Applications**

Recommended Prerequisite: **Marketing Fundamentals (AGR109)**

Module Parameters: **Access to an agriculture or horticulture industry**

Students apply knowledge of general marketing principles within the context of an agriculture or horticulture industry, focusing attention on materials and services offered to the consumer, marketing techniques and related career opportunities.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• describe the general function and characteristics of marketing within an agriculture or horticulture industry	• a **written/verbal report** in which the student applies general marketing principles to an existing agriculture or horticulture industry. Report to address: – goals of marketing – laws of supply and demand – market competition – barriers/restrictions to free trade – sources of market information – strategies for distributing product/service in the marketplace	40
• explain current changes and resulting opportunities in domestic and international markets	• a **multi-media presentation** of a plan for launching a new (or altered) product or service. Plan to address: – market research regarding present and future consumer needs – identification of a target market – product/service development – strategies for marketing the product/service	40
• research career clusters and the range of employment opportunities in marketing a commodity, product or service	• a **survey** of one or more career clusters in marketing a commodity, product or service. Survey to address employment opportunities based on statistics, job descriptions, entry requirements, training programs, potential for self-employment and industry trends	20

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • demonstrate effort to improve basic competencies.	*Assessment of student achievement will be based on:* • observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing learning – being innovative – communication. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Marketing Principles	*The student should:* • explain the goals of marketing an agricultural/horticultural commodity, product or service; e.g., – market position and profit margin – image creation and industry strength – price discovery – product exposure	
	• illustrate the laws of supply and demand, and factors that cause changes in supply, demand and pricing of the commodity, product or service; e.g., – imports and exports – environmental factors – consumer choices – economic conditions – technology	Changes in technology: • production • transportation • processing • preserving. Use weekly marketing reports to develop a graph of price trends.
	• examine competition in both domestic and international markets, and barriers/restrictions on free trade; e.g., – cultural, ethical, political, legal – economic systems – international organizations – trade agreements	Visit an auction, grain elevator, packing house or cannery.
	• identify sources of market information relevant to the commodity, product or service; e.g., – data base – private consultation	Invite marketing specialists to discuss marketing systems.

Concept	Specific Learner Expectations	Notes
Marketing Principles (continued)	*The student should:* • compare potential strategies that might be used to distribute the product or service in the marketplace; e.g., – extensive (open) – selective (niche) – exclusive (franchise)	
	• describe the stages through which the agricultural/horticultural product moves en route to the consumer; e.g., – inputs assembly – processing – brokering of product – transport.	Prepare flow charts/ diagrams of stages.
Market Development	• consider one or more strategies that may be used to promote an agricultural/horticultural commodity, product or service: e.g., – advertising – personal sales – telemarketing – display – in-store samples – trade shows	
	• assess opportunities for the global marketing of the commodity, product or service; e.g., – the United States and Mexico – nations of the Pacific Rim – other developing nations	
	• explain the role of market research and product development in adapting the commodity, product or service to meet present and future market needs; e.g., – consumer polls – surveys – focus groups	Design/conduct a consumer survey regarding preferences for agricultural products.
	• consider factors that influence consumer preferences and the development of new products and markets within the industry; e.g., – ethical, cultural, religious – demographic – environmental – economic	Create a new product, design a package and market the product within school/ community.

Concept	Specific Learner Expectations	Notes
Market Development (continued)	*The student should:* • outline market conditions leading to, and steps in altering the product or service, or developing a related product or service.	Research how to patent a process or product.
Career Clusters	• research career clusters and the range of occupational opportunities related to marketing an agricultural/horticultural commodity, product or service; e.g., – farm gate market services – wholesale/retail services – distribution and transportation – market research and analysis – product development – advertising and promotion – government services • infer career opportunities and trends from employment statistics • gather information regarding agriculture/horticulture industries in the future, and resulting career opportunities in marketing	Interviews. Work study/experience. Job shadowing. Individual/group research and presentation. Consider: • job description • employment markets • education/training • salary expectations.

MODULE AGR210: CONTROLLED GROWING ENVIRONMENTS

Level: **Intermediate**

Theme: **Technology and Applications**

Prerequisite: **None**

Module Parameters: **Greenhouse structure or confined livestock/poultry housing**

Students identify essential components of a controlled growing environment, and demonstrate techniques used to manage the growing environment within a protected structure.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• identify and explain essential components of controlled growing environments	• **identification** of at least six environmental components commonly controlled in protected structures and specific technologies/materials used to control each component	10
• suggest ways in which controlled growing environments can be adapted for crop production or confinement livestock housing	• **presentation of a design brief** for environmental control that addresses problems in crop or livestock production. Design brief to address: – identification of production problems caused by environmental factors – proposed structures and/or equipment that address production problems through partial or complete control of the growing environment – accurate working drawings and/or models of the production facility	40
• demonstrate techniques used to regulate and manage growing environments within a protected structure	• a **concept test** in which the student demonstrates knowledge of regulations and procedures relevant to health and safety in a controlled growing environment • **practical experiences** in which the student demonstrates techniques used to regulate and manage growing environments within a protected structure. The student will: – maintain temperature, humidity, ventilation and/or lighting at appropriate levels – regulate watering and feeding systems to ensure nutritional requirements are met – control/manage plant or animal diseases and pests – use approved methods to dispose of waste materials – perform approved maintenance services and repairs as required	50

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • demonstrate effort to improve basic competencies.	*Assessment of student achievement will be based on:* • observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – being innovative – managing resources – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Essential Components	*The student should:* • define and give examples of controlled growing environments • describe environmental components that are commonly controlled in protected structures; e.g., – temperature – humidity – light intensity – atmosphere • explain how specific problems in agriculture production are solved through environmental control • describe control systems and technologies used to maintain temperature, humidity, light and atmospheric gases at specific levels • describe methods of managing particulate and chemical contaminants in protected structures • determine utility/service requirements and energy conservation methods for a controlled growing environment.	Consider "minimum altering" (e.g., fence or cold frame) and "maximum altering" (e.g., greenhouse or totally confined rearing structure). Consider: • light quality • light intensity • light exposure time. Individual/small group research and presentation.

Concept	Specific Learner Expectations	Notes
Agricultural Applications	*The student should:* • explain applications of controlled growing environments in crop production or confinement livestock housing; e.g., – temperature, light, humidity and atmosphere control systems – feed and watering systems – sanitation and health practices • present a design brief for environmental control that addresses problems in crop or livestock production; e.g., – identify production problems caused by environmental factors – design structures and equipment that address production problems through partial or complete control of the growing environment – prepare accurate working drawings and/or models of the production facility • assess benefits and problems resulting from the use of protected structures in crop production or confinement livestock housing.	Applications should be specific to one area of production. Keep design briefs simple. Simulations: • planning • layout • construction.
Management Practices	• describe rules, regulations and legislation that relate to health and safety in a controlled growing environment • identify safety hazards and demonstrate safe practices while performing production tasks within a protected structure • regulate and manage the growing environment for a designated crop or livestock species; e.g., – operate control systems to maintain temperature, humidity and ventilation at proper levels – operate artificial lighting and shade-control mechanisms to maintain proper light intensity – regulate watering and feeding systems to ensure nutritional requirements are met • demonstrate appropriate sanitation and health practices within a protected structure; e.g., – manage/control disease and pests – dispose of waste material • perform routine maintenance services and repairs to enclosed structures and control technologies.	List steps in managing/maintaining a controlled growing environment. Consider: • heating • lighting • humidity • ventilation • nutrition/watering systems • sanitation. Keep a daily log that details production activities.

MODULE AGR212: **SOILS MANAGEMENT I**

Level: Intermediate

Theme: Management and Conservation

Recommended Prerequisite/ Corequisite: Resource Management and Conservation (AGR111)

Module Parameters: Science laboratory and land laboratory

Specific learner expectations in Soils Management I and II are consistent with Soils Investigations (SOIL 100–35) at Olds College. Teachers should contact the Registrar's Office, Olds College, regarding transfer of credit for competencies developed in AGR212 and AGR312.

Students examine soil formation and classification, conduct tests to determine the physical and chemical properties of soils, and explain the impact of soil properties on productivity.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Suggested Emphasis
The student will:	*Assessment of student achievement will be based on:*	
• describe the origin and composition of soils in western Canada	• given a test bank on the origin and composition of soils in western Canada, correctly responding to 15 out of 20 randomly selected test items. *Assessment Tool* *Soils Investigations Facilitator's Manual, LRDC*	15
	• given an Alberta grassland or forest soil profile, – identifying characteristics of each master horizon – determining the parent material and soil forming factors. *Assessment Tool* *Soils Investigations I Assignment Book, LRDC* *Lab Investigations: Soil Profile Analysis, AGR212-1*	15
• identify physical properties of soil and describe their relationship to soil productivity	• given a test bank on the physical properties of soil, correctly responding to 15 out of 20 randomly selected test items. *Assessment Tool* *Soil Investigations Facilitator's Manual, LRDC*	20

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Suggested Emphasis
The student will:	*Assessment of student achievement will be based on:*	
	• given four soil samples, a soil texture triangle and Munsell colour chart: – manually estimating the relative percentages of sand, clay and silt for each sample – determining the textural class of each soil sample – identifying the colour name and Munsell notation for each soil sample. *Assessment Tool* *Soils Investigations Materials Kit, LRDC* *Lab Investigations: Soil Texturing, AGR212-2*	20
• identify chemical properties of soil and describe their relationship to soil productivity	• given a test bank on the chemical properties of soil, correctly responding to 15 out of 20 randomly selected test items. *Assessment Tool* *Soils Investigations Facilitator's Manual, LRDC*	15
	• given four soil samples, a pH test kit and an electrical conductivity meter: – measuring soil pH for each soil sample – measuring electrical conductivity for each soil sample. *Assessment Tool* *Soils Investigations Materials Kit, LRDC* *Lab Investigations: Soil Acidity and Conductivity, AGR212-3*	15
• demonstrate effort to develop basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, with emphasis on: – using a variety of learning styles and preferences to acquire and apply information – allocating time, materials and other resources effectively – following safe laboratory procedures and eliminating potential hazards. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
	The student should:	
Soil Development	• describe major geological processes leading to the origin of soils in western Canada	Contact Department of Instructional Design, Olds College, for additional support materials.
	• identify and describe factors that influence the formation of different kinds of soils; e.g., – climate – living organisms – parent materials – topography – time	
	• describe the major components of soil and their relationship to soil productivity; e.g., – minerals – organic matter – air – water	Assess a local piece of land regarding soil formation factors that have helped to shape soil to its present condition.
	• identify master horizons of a soil profile, and relate common horizon suffixes to soil forming factors	Demonstrations of soil water holding capacity.
	• interpret and compare the soil profiles of forest and grassland environments	
	• list and describe the soil orders of the Canadian System of Soil Classification; e.g., – distinguishing characteristics – typical horizon sequences.	Soil profile diagrams.
Physical Properties	• define soil texture and describe textural classes of soil	Hand texturing laboratory.
	• apply hand-texturing techniques to estimate the texture of a soil sample; e.g., – dry consistence test – moist cast test – ribbon test	
	• define soil structure and describe factors that influence the formation of soil structure	Map soil zones of the prairie provinces.
	• identify different types of soil structures, and relate soil structure to common soil horizons	
	• explain the significance of colour as an indicator of soil conditions, and descriptors used to indicate soil colour	Soil colour laboratory.
	• measure soil colour using the Munsell Soil Colour Chart	
	• interpret relationships between physical properties of soil and plant growth.	

Concept	Specific Learner Expectations	Notes
Chemical Properties	*The student should:* • describe the nature and development of acid and alkaline soils • define and measure soil reaction (pH) • explain active and reserve acidity, and their relationship to the buffering capacity of soil • describe the effect of soil pH on plant growth, and methods of adjusting soil pH • describe the origin and characteristics of saline soils • define and measure soil salinity • describe the effect of soil salinity on plant growth, and strategies for managing saline soils.	Soil pH laboratory. Electrical conductivity laboratory.

MODULE AGR213: INTEGRATED PEST MANAGEMENT

Level: **Intermediate**

Theme: **Management and Conservation**

Prerequisite: **None**

Module Parameters: **Access to an agriculture production, horticulture or forest industry**

Students apply knowledge of biological, cultural and chemical pest-control measures within the context of an agriculture, horticulture or forest industry.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• describe the life cycle and ecology of major groups of pests	• **identification and classification** of at least 10 pests common to an agriculture, horticulture or forest industry • **illustrations** of the life cycle and food web for at least one pest within each of the following groups: – weed – insect – disease – vertebrate	20
• describe and assess biological, cultural and chemical strategies for pest control	• a **concept test** in which the student demonstrates knowledge of the principles, strategies, advantages and disadvantages of biological, cultural and chemical pest control • given a sample pest, a **description** of one biological, one cultural and one chemical method of control	20
• explain basic principles, strategies and benefits of integrated pest management	• **presentation of a report** on integrated pest management. The report will address: – the history of pest management – reasons for the development of integrated pest management – basic principles and strategies of integrated pest management – benefits and problems related to the use of integrated pest management	20

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • develop practical procedures for pest management within an agriculture, horticulture or forest industry	*Assessment of student achievement will be based on:* • the **demonstration of practical procedures** for pest management. The student will: – identify specific pest problems – perform pest sampling and monitoring procedures – establish threshold levels that determine when control measures should be implemented – apply safe pest management strategies based on pest-host biology and consideration of the ecosystem – assess impact of pest control practices on human and environmental health	40
• demonstrate effort to improve basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing learning – being innovative – managing resources – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Life Cycles and Ecology	*The student should:* • define a pest and describe specific pest problems in agriculture, horticulture or forestry • explain the benefits of pest management to agriculture, horticulture and forestry • describe the biology and life cycles of major groups of pests; e.g., – weeds – insects – diseases – vertebrates	A pest is generally considered to be an organism that adversely affects human activities. Therefore, determination of pests will depend upon context. Diagram and explain ecosystem structures.

Concept	Specific Learner Expectations	Notes
Life Cycles and Ecology (continued)	*The student should:* • identify and classify a range of common pests; e.g., – mites, ticks – birds – fungi – weeds – insects – rodents • explain the interrelatedness of common pests with ecosystems and environments; e.g., – relationship of soil, water and air characteristics to plant/animal health – food webs and energy chains – environmental factors that limit populations.	Consider limiting factors on populations in ecosystems. Collect, identify and mount insect and weed pests. Draw/construct food webs and energy chains involving common pests.
Methods of Pest Control	• explain basic principles of biological pest control and give examples of beneficial organisms used to control pest populations; e.g., – predators – parasites – pathogens • explain basic principles of cultural pest control and give examples of cultural practices used to control pest populations; e.g., – soil tillage – crop rotation – clean culture • explain basic principles of chemical pest control and give examples of chemical families and pesticide formulations used to control pest populations • describe and give examples of physical and mechanical pest control strategies • identify regulatory bodies and legislation established to assist pest control programs • explain the role of breeding programs in developing organisms that have genetic resistance to pests • assess the advantages and disadvantages of biological, cultural, chemical, physical, mechanical and regulatory pest control programs.	Case studies on different techniques of control. Discuss the importance of rotating chemical groups being used to avoid pest tolerance. Explain genetic resistance.

Concept	Specific Learner Expectations	Notes
Integrated Management	*The student should:* • describe the history of pest management • define and give reasons for the development of integrated pest management; e.g., – management versus control perspective – environmental and human health concerns • explain the basic principles and strategies of integrated pest management; e.g., – identification of key parts – biology of crop/host and its ecosystem – ecosystem manipulation – economic threshold levels – pest sampling and monitoring • cite benefits and problems related to the use of integrated pest management as a pest control strategy.	"Control" versus "Management". Explain the significance of: • economic thresholds • scouting procedures • record keeping.
Practical Procedures	• identify specific pest problems within an agriculture, horticulture or forest industry • perform pest sampling and monitoring procedures in order to determine the presence of pests, their stage of development and the nature/ extent of damage caused • establish threshold levels that determine when pest control measures should be implemented • identify and apply pest management procedures that are based upon relevant aspects of pest/host biology and the ecosystem • explain safe techniques in pesticide application; e.g., – use of equipment and supplies – mixing and application techniques – clean-up and disposal • assess the impact of pest control practices on human and environmental health.	Invite an agricultural specialist to explain the advantages/ disadvantages of different pest control measures. Suggest reference: *Agriscience Fundamentals and Applications* (Section 4). Potential linkages with "Pesticide Applicator/ Dispenser Certificate Courses". Contact: • Lakeland College • Olds College.

MODULE CURRICULUM AND ASSESSMENT STANDARDS
ADVANCED LEVEL

The following pages define the curriculum and assessment standards for the advanced level of Agriculture.

> Advanced level modules demand a higher level of expertise and help prepare students for entry into the workplace or a related post-secondary program.

Module AGR301:	Global Issues in Agriculture	F.3
Module AGR302:	Ethics in Agriculture and Food Production	F.7
Module AGR303:	Field, Nursery and Greenhouse Crops II	F.11
Module AGR304:	Livestock, Poultry and Animal Specialties II	F.15
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MODULE AGR301: GLOBAL ISSUES IN AGRICULTURE

Level: Advanced

Theme: Social and Cultural Perspectives

Prerequisite: None

Module Parameters: Access to government and/or community agencies responsible for agriculture planning, research, management and resource conservation

Students analyze a range of issues in agriculture, and develop strategies for dealing with agriculture issues within a global context.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Suggested Emphasis
The student will: • analyze a range of economic, environmental and social issues in agriculture	*Assessment of student achievement will be based on:* • given access to information and resources concerning social, economic and/or environmental issues in agriculture: – identifying at least three current issues and clarifying concerns being expressed regarding each issue – preparing and presenting a critical analysis of at least one of the issues. *Assessment Tool* *Global Issues in Agriculture, AGR301-1* *Issue Analysis, AGR301-2*	25
• compare issues that involve agriculture in Alberta and Canada to similar issues at a global level	• given access to information and resources concerning issues in agriculture, completing a research project that compares an issue involving agriculture in Alberta and/or Canada with a similar issue at the global level. *Assessment Tool* *Research Process, AGR301-3*	25

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement will be based on:*	
• develop action plans that address a complex issue in agriculture	• given a complex issue in agriculture: – negotiating and debating the issue while assuming the role of one or more stakeholder groups – preparing and presenting a position paper on the issue that outlines a plan of action. *Assessment Tool* *Negotiation and Debate, AGR301-4* *Presentations/Reports, AGR301-5*	50
• demonstrate effort to develop basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, with emphasis on: – thinking critically to evaluate situations, solve problems and make decisions – analyzing ethical issues and identifying appropriate ethical behaviour – building consensus and working toward agreement by resolving divergent interests – understanding impact on self and society of breaking with societal values and standards. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

Concept	Specific Learner Expectations	Notes
Issue Analysis	*The student should:* • identify a range of current social, economic and environmental issues in agriculture • list and categorize concerns being expressed regarding a social, economic and environmental issue in agriculture; e.g., – environmental impacts – nutritional or food safety concerns – social, political or economic factors – ethical concerns • critically analyze a current issue in agriculture; e.g., – identify conflicts among different stakeholder groups – gather information relevant to different sides of the issue – consider the implications of adopting different alternatives.	

Concept	Specific Learner Expectations	Notes
The Global Context	*The student should:* • relate a local social, economic or environmental issue in agriculture to a similar issue at the global level • compare statements made by scientists, different interest groups and the media regarding the issue • consider costs and benefits associated with different approaches for dealing with the issue at local and global levels.	
Action Plans	• prepare a position paper on a complex issue in agriculture; e.g., – clarify the issue and identify related perspectives – develop a position and provide a rationale – outline a personal plan of action • participate in a debate of a complex issue in agriculture while assuming the role of one or more stakeholder groups; e.g., – farmer – environmentalist – animal-welfare advocate – consumer – scientist.	

MODULE AGR302: ETHICS IN AGRICULTURE AND FOOD PRODUCTION

Level: **Advanced**

Theme: **Social and Cultural Perspectives**

Prerequisite: **None**

Module Parameters: **Access to government and/or community agencies responsible for agriculture planning, research, management and resource conservation**

Ethical issues may be sensitive for some students. Emphasis should be placed on a "process" for conflict analysis and not on particular positions that may be expressed.

Students identify a range of ethical concerns relevant to agriculture and food production, analyze different points of view regarding agriculture technologies, and clarify a personal position on an ethical issue in agriculture.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• identify a range of ethical concerns regarding current practices in agriculture	• the **identification** of ethical concerns regarding three or more current practices in agriculture and food production. The student will demonstrate knowledge of social, political, environmental and/or economic perspectives regarding each concern	20
• analyze different points of view regarding a technology used in agriculture	• the **analysis** of different points of view regarding a controversial practice in agriculture and food production. The student will: – clarify opinions expressed and concerns raised – compare ethical positions taken by different stakeholder groups – gather information relevant to different sides of the debate – identify costs and benefits associated with different approaches – consider the potential for compromise and/or consensus among stakeholder groups	50
• clarify a position on an ethical issue in agriculture.	• **presentation of a position paper** on an ethical concern in agriculture. The student will: – clarify the concern and identify differing perspectives – develop a position and provide a rationale – outline a personal plan of action	30

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • demonstrate effort to refine basic competencies.	*Assessment of student achievement will be based on:* • observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – being innovative – ethics – demonstrating responsibility *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Ethical Concerns	*The student should:* • identify a range of ethical concerns in agriculture; e.g., – animal welfare – land and water use – world food distribution – sustainable production systems – biotechnology applications – genetic diversity – food safety standards • list and categorize different perspectives regarding each concern; e.g., – social – political – environmental – economic.	Discuss and provide a definition for "ethics".
Conflict Analysis	• clarify opinions expressed and concerns raised about a controversial practice in agriculture • compare ethical positions taken by different stakeholder groups; e.g., – producer/processor – environmentalist – animal-welfare advocate – consumer – scientist – politician – business person	Remind students that it is the "process" for issue analysis that is important, not particular positions that may be adopted.

Concept	Specific Learner Expectations	Notes
Conflict Analysis (continued)	*The student should:* • gather information relevant to different sides of the discussion • identify costs and benefits associated with different approaches for dealing with the issue • consider the potential for compromise and/or consensus among stakeholder groups.	
Individual and Shared Actions	• prepare a position paper on an ethical concern in agriculture; e.g., – clarify the concern and identify differing perspectives – develop a position and provide a rationale – outline a personal plan of action • debate an ethical concern in agriculture and food production; e.g., – conduct research – adopt a position – participate in debate.	

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MODULE AGR303: FIELD, NURSERY AND GREENHOUSE CROPS II

Level: **Advanced**

Theme: **Technology and Applications**

Prerequisite: **Field, Nursery and Greenhouse Crops I (AGR203)**

Module Parameters: **Land laboratory and/or greenhouse facility**

Field crop specialization could involve study of one or more of the following: cereals, forage, oil seeds, pulse crops, mushrooms, herbs/spices, vegetables, medicinal plants, exotic plants.

Students demonstrate techniques used to manage production of field, nursery or greenhouse crops, focusing attention on enterprise selection, taxonomy and genetics, production management and industry trends.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• assess opportunities for producing a field, nursery or greenhouse crop	• **determination** of length of growing season and rainfall, air and soil parameters for a particular locale • **identification** of crop varieties suited to growth conditions of a particular locale	10
• apply principles of taxonomy and genetics to field, nursery or greenhouse plants	• **identification** of common species of field, nursery and/or greenhouse crops using common names and botanical nomenclature • **classification** of common species of field, nursery and/or greenhouse crops according to growth habit and taxonomy • a **concept test** in which the student demonstrates knowledge of the application of heredity principles and reproductive technologies to a field, nursery or greenhouse crop. Concept test to address: – dominant and recessive traits – selection criteria and procedures – grading systems and standards – genetic engineering	30
• demonstrate practical skills in managing the production of a field, nursery or greenhouse crop	• **practical experiences** in which the student will: – present plans for a production venture – prepare a growing medium/seed bed – propagate a field, nursery or greenhouse crop – cultivate, water and fertilize the crop – control plant pests and diseases – utilize soil and water conservation practices	50

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• research industry trends in field, nursery or greenhouse crop production	• a survey of production and consumption patterns within Alberta, Canada and the global community. The survey will address the impacts of economic, environmental and social trends on production, and predict future production on the basis of current issues and trends	10
• demonstrate effort to refine basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing resources – teamwork, leadership and service – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
	The student should:	
Enterprise Selection	• explain how personal needs may influence crop selection; e.g., – food for personal consumption – economic goals – interest in aesthetics – personal motivation and aptitude	Potential linkages with Alberta Agriculture Green Certificate Farm Training Program: • crop production • irrigated crop production
	• identify market factors that influence crop selection; e.g., – market demands – market size, location and access – market competition – market trends	Identify input costs and potential profits for a production venture.
	• assess financial opportunities related to crop production; e.g., – fixed and variable costs – forecast of returns – risk factors – income stabilization programs	Invite a District Agriculturalist to discuss enterprise selection factors.

Concept	Specific Learner Expectations	Notes
Enterprise Selection	*The student should:* • consider land requirements, and the suitability of soil and water conditions to production operations • assess the suitability of Alberta's climate to potential crops; e.g., – growing days – frost-free days – ambient temperature – soil temperature • consider equipment needs at different stages of production; e.g., – seeding/planting – cultivation – harvesting • consider labour and transportation needs within the industry; e.g., – availability – cost.	Consider advertising and promotional technologies used to access greenhouse and nursery markets. Identify determinants of regional commodity production.
Taxonomy and Genetics	• classify field, nursery or greenhouse plants; e.g., – according to growth habit – according to taxonomy • identify field, nursery or greenhouse plants, e.g., – using common names – using botanical nomenclature • research heredity principles and their application to plants that are grown; e.g., – dominant and recessive traits – selection criteria and procedures – systems of breeding • research reproduction technologies and their application to plants that are grown; e.g., – propagation techniques – genetic engineering • describe procedures used to maintain the quality of plants within the industry; e.g., – selection criteria and regulations – showing and judging – grading systems and standards – record keeping and record systems.	Plant collections, labelling and mounts. Breeding experiments with cucumbers, squash, pumpkins and/or gourds. Use an identification key to identify previously unknown plants.

Concept	Specific Learner Expectations	Notes
Production Management	*The student should:* • apply knowledge of plant management practices in production activities; e.g., – characteristics of plant health and disorders – remedial strategies for plant disorders – disease and pest control – plant growth management	Consider strategies for managing a crop from seed to sale.
	• demonstrate techniques for maintaining sustainable use of natural resources; e.g., – management practices related to soil fertility and conservation – management practices related to water quality and the hydrologic cycle	"Pesticide Safety Course" (Olds College) Develop/implement a crop rotation plan.
	• address current concerns regarding plant management practices and sustainable production systems; e.g., – soil, water and air quality – organic and inorganic amendments – biological and chemical control measures – effluent disposal and pollution – food safety and consumer confidence	Individual research regarding relevant issues. Keep a daily log that details production activities.
	• address legal considerations through plans for managing production activities; e.g., – environmental considerations – inspection, regulation and quality control.	Biological control agents.
Industry Trends	• research production and consumption patterns within Alberta, Canada and the global community	Construct/interpret graphs that indicate production/consumption patterns over a period of time.
	• assess the impact of economic, environmental and social trends on production practices within the industry; e.g., – international trade and global competition – trade liberalization – rural and urban populations – food safety and consumer confidence – consumer demands – support for research and development – environmental stewardship and sustainable development	Consider the impacts of local, national and global trends on industry practices.
	• describe ways in which government regulations, policies and guidelines may influence production	Individual/group research projects and presentations.
	• predict future production on the basis of current issues and trends.	Ask students to predict future production practices and give at least three reasons for their predictions.

MODULE AGR304: LIVESTOCK, POULTRY AND ANIMAL SPECIALTIES II

Level: **Advanced**

Theme: **Technology and Applications**

Prerequisite: **Livestock, Poultry and Animal Specialties I (AGR204)**

Module Parameters: **Livestock, poultry or speciality animals; appropriate animal confinement structures**

Potential areas of specialization include: beef, dairy, poultry, swine, sheep, game, exotics, bees, aquaculture.

Students demonstrate techniques used to manage production of livestock, poultry or other animal commodities, focusing attention on enterprise selection, genetics and reproduction, production management and industry trends.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• assess opportunities for producing beef, dairy, sheep, swine, poultry or specialty animals	• **selection** of a suitable livestock, poultry or animal specialty enterprise for a particular locale. Selection to include consideration of potential markets and financial opportunities, land, soil and water requirements, climate, available labour, feed supplies, support services and personal preferences	10
• apply principles of genetics and reproduction to beef, dairy, sheep, swine, poultry or specialty animals	• a **concept test** in which the student demonstrates knowledge of the application of heredity principles and reproduction to an animal production enterprise. Concept test to address: – dominant and recessive traits – selection criteria and procedures – systems of breeding – grading systems and standards – the reproductive process – procedures used to maintain and improve quality and productivity	30
• demonstrate practical skills in managing the production of beef, dairy, sheep, swine, poultry or specialty animals	• **practical experiences** in which the student will plan and implement a production venture. The production venture will involve: – care for newborn animals – planning and implementing a feeding program – cleaning and disinfecting holding structures – controlling pests, diseases and other ailments – handling and restraining animals in safe and ethical ways – utilizing soil and water conservation practices	50

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• research industry trends in beef, diary, sheep, swine, poultry or specialty production	• a survey of production and consumption patterns within Alberta, Canada and the global community. The survey will address the impacts of economic, environmental and social trends on production, and predict future production on the basis of current issues and trends	10
• demonstrate effort to refine basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – ethics – managing resources – teamwork, leadership and service – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
	The student should:	
Enterprise Selection	• explain how personal needs may influence enterprise selection; e.g., – food for personal consumption – economic goals – personal motivation and aptitude	Potential linkages with Alberta Agriculture Green Certificate Farm Training Program: • beef • dairy • sheep • sine.
	• identify market factors that influence enterprise selection; e.g., – market demands – market size, location and access – market competition – market trends	Identify input costs and potential profits for a production venture.
	• assess financial opportunities related to animal production; e.g., – fixed and variable costs – forecast of returns – risk factors – income stabilization programs	Invite a District Agriculturalist to discuss enterprise selection factors.
	• consider land requirements, and the suitability of soil and water conditions to production operations	Identify determinants of regional commodity production.

Concept	Specific Learner Expectations	Notes
Enterprise Selection (continued)	*The student should:* • assess the suitability of Alberta's climate to production activities • consider structural and equipment needs at different stages of production • consider labour and transportation needs within the industry; e.g., – availability – cost.	
Genetics and Reproduction	• research heredity principles and their application to animals that are raised; e.g., – dominant and recessive traits – selection criteria and procedures – systems of breeding • apply knowledge of specific reproduction processes; e.g., – estrous cycle – gestation period – natural service/artificial insemination – normal birth process – age criteria for breeding • research reproduction technologies and their application to animals that are raised; e.g., – embryo transfer – gender selection • describe procedures used to maintain the quality of animals within the industry; e.g., – selection criteria and regulations – pedigrees and performance information – showing/judging systems and standards – registry and record systems.	Identify desirable traits of specific animals and related heredity principles. Invite a local veterinarian to explain selection and breeding systems. Discuss the importance of breeding records. Examine registration and transfer forms. Organize a judging competition on a specific animal breed.
Production Management	• apply knowledge of animal management practices in production activities; e.g., – physical and behavioural characteristics of health – nutritional management – treatment of animal diseases and disorders – safe and ethical animal handling/restraint • describe approved methods of marking or tagging animals for identification	Consider strategies for managing livestock from birth to market. Consider growth and development patterns in relation to the age of an animal. Food sources and additives. Animal stress in relation to animal confinement.

Concept	Specific Learner Expectations	Notes
Production Management (continued)	*The student should:* • demonstrate techniques for maintaining sustainable use of natural resources; e.g., – management practices related to soil fertility and conservation – management practices related to water quality and the hydrologic cycle	Symptoms of common diseases.
	• address current concerns regarding animal management and sustainable production systems; e.g., – animal rights and animal welfare – applications of biotechnology – protein efficiency – soil, water and air quality – organic and inorganic additives – effluent disposal and pollution – food safety and consumer confidence	Individual research regarding relevant issues.
	• address legal considerations through plans for managing production activities; e.g., – environmental considerations – safety and health inspection/regulation.	Legal considerations related to animal housing. Keep a daily log that details production activities.
Industry Trends	• research production and consumption patterns within Alberta, Canada and the global community	Construct/interpret graphs that indicate production/consumption patterns over a period of time.
	• assess the impact of economic, environmental and social trends on production practices within the industry; e.g., – international trade and global competition – trade liberalization – rural and urban populations – food safety and consumer confidence – consumer preferences – support for research and development – environmental stewardship and sustainable development	Consider the impacts of local, national and global trends on industry practices. Individual/group research projects and presentations
	• describe ways in which government regulations, policies and guidelines may influence production	
	• predict future production on the basis of current issues and trends.	Ask students to make predictions regarding future production practices and give at least three reasons for their predictions.

MODULE AGR305: **AGRIFOODS II**

Level: **Advanced**

Theme: **Technology and Applications**

Prerequisite: **Agrifoods I (AGR205)**

Module Parameters: **Access to an agrifoods industry**

Potential areas of investigation include: dairy, beef, pork, poultry, cereals, oil seeds, sugar beets, wine, fruits/vegetables, honey.

Students demonstrate knowledge of techniques used to manage the development of an agrifood product or related service, focusing attention on government regulation and control, economic principles, product quality and safety, environmental impact and industry trends.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• identify government legislation and policies that regulate practices within an agrifood industry	• **summaries** of the mandates of relevant government agencies responsible for product quality, worker safety and sustainable use of natural resources • **identification** of specific government legislation/ policies that affect: – inspection of raw materials – product grading, packaging and labelling – sanitation standards – worker safety • **forecasts** regarding applications of the International Standards Organization (ISO) in regulating industry practices	30
• describe techniques used to manage industry practices, including the application of economic principles, product quality and safety, and sustainable use of natural resources	• a **research project** in which the student demonstrates knowledge of management functions within an agrifood industry. The research project will address: – basic economic principles, including supply and demand, law of diminishing returns and comparative advantage – quality control systems, including parameters of quality and inspection/grading systems – techniques for assuring sustainable use of natural resources, including methods of effluent disposal, water treatment after use, and use of biodegradable materials – impacts of relevant supply systems on industry practices, including supply of raw materials, production volumes and access to markets	30

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• research industry trends and opportunities for developing new agrifood products	• a survey of production and consumption patterns within Alberta, Canada and the global community. The survey will address: – the impact of economic, environmental and social trends on industry practices – opportunities for product research and development – future industry trends based on consideration of current challenges, needs and issues	40
• demonstrate effort to refine basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing learning – managing resources – communication. *Assessment Tools* *Observational Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
	The student should:	
Government Regulations	• explain the role of government legislation in maintaining product quality and safety within an agrifood industry; e.g., – inspection of raw materials – product grading – packaging and labelling – sanitation standards – safety regulations	Discuss legal definitions and standards for the processed product.
	• research the mandates of specific government agencies in maintaining product quality and safety; e.g., – Agriculture Canada – Alberta Agriculture, Food and Rural Development – Consumer and Corporate Affairs – Health and Welfare Canada	Investigate worker safety concerns and related legislation.
	• research potential applications of the International Standards Organization (ISO) in regulating industry practices	

Concept	Specific Learner Expectations	Notes
Government Regulations (continued)	*The student should:* • research the mandates of specific government agencies regarding industry use of land, water and air; e.g., – Alberta Environmental Protection – Environment Canada.	
Management Functions	• apply knowledge of basic economic principles to management decisions within the industry; e.g., – supply and demand – law of diminishing returns – comparative advantage	Quality control on incoming product/ materials. Hazard Analysis at Critical Control Points (HACCP).
	• establish criteria and techniques for assuring the quality of a commodity or value-added product through processing, transportation and storage; e.g., – parameters of quality – inspection and grading – quality control systems	Grading and labelling requirements.
	• establish criteria and techniques for assuring sustainable use of natural resources; e.g., – methods of effluent disposal – water treatment after use – soil conservation practices – use of biodegradable materials	Suggested video: *On the Line* (deals with quality control in cheese production).
	• explain how relevant supply systems may influence industry management; e.g., – supply of raw materials – production volumes – access to market	Research impacts of: • milk board system • pork marketing board • egg/poultry marketing boards • Canadian Wheat Board • Honey Producers Cooperative.
	• research current issues regarding food quality and sustainable processing systems; e.g., – food additives, preservatives and irradiation – use of organic and inorganic materials – effluent disposal and pollution.	Individual research regarding relevant issues.

Concept	Specific Learner Expectations	Notes
	The student should:	
Industry Trends	• research production and consumption patterns within Alberta, Canada and the global community	Construct/interpret graphs that indicate production/consumption patterns over a period of time.
	• assess the impact of economic, environmental and social trends on practices within the industry; e.g., – international trade and global competition – trade liberalization – rural and urban populations – food safety and consumer confidence – consumer preferences – support for research and development – environmental stewardship and sustainable development	Consider the impacts of local, national and global trends on industry practices.
	• describe opportunities for product research and development within the industry; e.g., – altering existing products – developing new products – developing new markets	Individual/group research projects and presentations.
	• predict future production on the basis of current trends and issues.	Ask students to predict future production techniques and products, giving at least three reasons for their predictions.

MODULE AGR306: LANDSCAPE AND TURF MANAGEMENT II

Level: **Advanced**

Theme: **Technology and Applications**

Prerequisite: **Landscape and Turf Management I (AGR206)**

Module Parameters: **Access to a residential, recreational or industrial/institutional landscaped area**

Potential areas of specialization include: home landscapes, golf courses, recreational fields and parks, institutional/industrial grounds, roadside landscapes.

Students demonstrate techniques used to manage landscape and turf management services, focusing attention on plant taxonomy, equipment maintenance, effective landscape practices, cost estimates and pricing.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• **identify and classify plants suitable for use in Alberta landscapes**	• **classification** of landscape plants according to taxonomy and growth habit • **identification** of at least 40 different trees, shrubs, ground covers, flowers and/or turfgrasses appropriate for specific applications in Alberta landscapes. Plants should be in addition to those identified in AGR206: Landscape and Turf Management I • **identification** of at least 10 common weeds found in Alberta landscapes and turfgrasses. Weeds should be in addition to those identified in AGR206: Landscape and Turf Management I	20
• **perform daily maintenance and safety checks on equipment used in landscape practices**	• **routine maintenance** of hand and power equipment commonly used in landscape practices, including: – cleaning and sharpening of hand tools and mower blades – lubrication of hand and power tools – checking of oil, filters, battery, spark plugs and radiator on small engines – checking tires and tire pressure – techniques to prepare equipment for off-season storage *Assessment Tools (to be developed)* *Power Machines, Appendix 3.1*	20

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• demonstrate practical skills used to install and maintain landscape plants and turfgrasses	• **demonstration of practical skills** used to install and maintain landscape plants and turfgrasses. Practical skills to include: – safe operation and use of hand and power equipment – proper planting and/or transplanting techniques – techniques for repairing turfgrasses in the spring season – analysis of turf management problems and corrective measures – appropriate practices for pruning trees and shrubs – basic fertilizer calculation/application to turf areas – techniques for winterizing trees, shrubs, perennials and turfgrasses *Assessment Tools (to be developed)* *Landscape Service, Appendix 3.2*	50
• apply knowledge of basic business principles to landscape and turf management services	• **calculation and preparation** of cost analysis, estimates and bids for landscape services	10
• demonstrate effort to refine basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing resources – teamwork, leadership and service – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Plant Classification and Identification	*The student should:* • describe methods of classifying landscape plants; e.g., – according to taxonomy – according to growth habit • describe methods of identifying landscape plants; e.g., – using common names – using botanical nomenclature • explain the use of taxonomy keys in plant identification • identify and select appropriate trees, shrubs and ground covers for given applications in Alberta landscapes; e.g., – herbaceous and woody – evergreen and deciduous • identify and select appropriate flowers for given applications in Alberta landscapes; e.g., – annual, biennial and perennial – bulbs, tubers and rhizomes • identify and select appropriate turfgrasses for given applications in Alberta landscapes; e.g., – rhizome producing, stolon producing and bunch type – fine, medium and course leaf texture • distinguish between single species turf plantings and grasses that are mixtures or blends.	Use an identification key to identify previously unknown plants. Identify at least 40 landscape plants on site. Collect/mount a weed display. Identify specialty plants, including bulbs, corms, tubers and fleshy roots. Choose and plant bare root, ball and burlap, and container grown stock. Relate anatomy of turfgrass to appropriate management practices.
Equipment Maintenance	• perform daily maintenance on hand and power equipment used in landscape practices; e.g., – clean and sharpen hand tools and mower blades – lubricate hand and power tools – check oil, oil filter, battery and radiator on small engines – check tires and tire pressure • perform safety checks on equipment and report malfunctions • diagnose and trouble shoot equipment failure • maintain appropriate records regarding the use of power equipment; e.g., – hours of operation – periodic servicing	CAUTION Review safety knowledge and skills from AGR206 PRIOR to practical activities. Potential linkages with the "Landscape Gardener Apprenticeship Training Program".

Concept	Specific Learner Expectations	Notes
Equipment Maintenance (continued)	*The student should:* • prepare equipment for off-season storage; e.g., – cleaning – oil change – repair.	
Maintenance Procedures	• demonstrate proper planting and/or transplanting techniques for landscape plants; e.g., – handling of plant materials – preparing the growing media and seed bed – installing plants and turf – staking and guying the plants	Perform general landscape and turf maintenance procedures. Keep a daily log that details maintenance activities. Demonstrate proper use of core aerator and power rake.
	• explain proper techniques for repairing turfgrasses in the spring season; e.g., – cleanup – dethatching – rolling of lawn – first cutting – patching the lawn – aeration and top dressing – fertilizing	
	• analyze turf management problems and suggest corrective measures; e.g., – mowing height – compaction – thatch problems – fairy ring – pest problems	Perform basic fertilizer calculations for turfed areas.
	• explain the reasons and appropriate practices for pruning trees and shrubs; e.g., – parts of the trees – seasonal timing – tools and methods	Demonstrate corrective pruning on trees and shrubs: • thinning, heading back, jump cuts • hedge shearing • pruning of conifers.
	• explain types of winter damage to landscape plants and ways to protect against winter injury; e.g., – windburn and sunscald – temperature extremes – ground heaving – damage owing to ice, snow and salt – snowplow and vehicle damage.	Explain winterizing techniques for trees, shrubs and turf. Potential linkages with "Pesticide Applicator/ Dispenser Certificate Courses". Contact: • Lakeland College • Olds College.

Concept	Specific Learner Expectations	Notes
Business Practices	*The student should:* • identify factors that determine the cost of landscape services; e.g., – material costs – labour costs – equipment usage costs – overhead costs • prepare cost analyses, estimates and bids for landscape services • identify government regulations and policies that influence landscape management practices; e.g., – land planning and reclamation – use of equipment and chemicals – environmental constraints.	Consider daily work ethic: • attendance • punctuality • use of time • group skills/ attitudes • respect for property • clean-up.

MODULE AGR307: PETS AND EQUINE II

Level: **Advanced**

Theme: **Technology and Applications**

Prerequisite: **Pets and Equine I (AGR207)**

Module Parameters: **A domestic animal and appropriate animal confinement structure**

Students demonstrate techniques used to manage an animal boarding or training facility, focusing attention on the care and use of physical facilities, husbandry and training skills, health and reproductive technologies, and record keeping systems.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• describe the maintenance and use of kennels, cages, stables or other confinement structures used in caring for domestic animals	• the **selection, maintenance and use** of a kennel, cage, stable or other animal confinement structure. The student will select and/or design an appropriate confinement structure, and demonstrate knowledge of approved methods of: – supplying water and feed – bedding the animal – managing wastes – cleaning and disinfecting the structure	20
• demonstrate practical skills and approved procedures for animal husbandry and training	• **practical experiences** in which the student will: – provide approved care for a domestic animal – monitor health indicators, including vital signs and behaviour – monitor and control agents of stress – practice intervention strategies for a sick animal – use approved procedures to handle and train the animal	50
• explain applications of health and reproductive technologies in providing animal care	• a **concept test** in which the student demonstrates knowledge of health and reproductive technologies relevant to a domestic animal. Concept test to address: – animal nutrition – disease prevention and treatment – reproductive processes – obstetrics – cage, kennel or stable management	20

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• apply knowledge of appropriate techniques for managing an animal boarding or training facility	• a **summary** of environmental constraints, safety and health regulations that need to be addressed by an animal boarding or training facility • a **survey** of procedures used to maintain quality of the animal breed, including breed association standards, showing/judging systems and standards • **maintaining appropriate records** regarding animal ancestry and history, including breeding records, parturition records and performance information	10
• demonstrate effort to refine basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – ethics – managing resources – teamwork, leadership and service – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Confinement Structures	*The student should:* • describe the use of kennels, cages, stables and/or other confinement structures used in caring for a domestic animal; e.g., – fences and shelters – totally confined rearing structures • describe facilities and equipment required for water and feed • consider criteria relevant to the selection and/or design of structures and equipment; e.g., – function, operation and maintenance – safety and efficiency – ethical, legal and environmental factors – economics and cost • describe appropriate bedding and waste management systems	Picture collection of various types of animal shelters. Design/construct models for approved structures and equipment. Construct models of fences, gates, corrals, etc., suited to a specific animal.

Concept	Specific Learner Expectations	Notes
Confinement Structures (continued)	*The student should:* • describe methods of cleaning and disinfecting kennels, cages, stables and other confinement structures • identify policy, legislation and safe practices relevant to the use of confinement structures and equipment.	
Animal Husbandry and Training	• describe the characteristics of a healthful animal environment; e.g., – sanitation – housing – pest control – methods of restraint • identify and describe health indicators for a domestic animal; e.g., – physical signs of health – normal vital signs – normal behaviour • identify agents and sources of stress for the animal, and their affects on for health • recognize abnormal behaviour, and practise intervention strategies for a sick animal; e.g., – reduce stress – administer emergency first aid – treat/control disease and other ailments – administer medication – seek professional assistance • describe veterinary services that are available, and the protocol for accessing these services • demonstrate approved procedures for handling and training the animal; e.g., – approaching and petting the animal – restraining the animal – walking/leading the animal – controlling/disciplining the animal – exercising the animal – grooming the animal • demonstrate accepted methods of teaching the animal to perform in approved competitions and events.	Animal stress in relation to animal confinement. Symptoms of common diseases. Design and implement an exercise/training program for a chosen domestic animal.

Concept	Specific Learner Expectations	Notes
Health and Reproductive Technologies	*The student should:* • research contributions of technology to animal health care practices; e.g., – nutrition – obstetrics – disease prevention and treatment – cage, kennel or stable management • explain reproductive technologies that are used in breeding domestic animals ; e.g., – artificial insemination – embryo transfer – estrous manipulation – gender selection • explain specific reproductive processes characteristic of a domestic animal; e.g., – estrous cycle – gestation period – natural service/artificial insemination – normal birth process – age criteria for breeding.	Invite a local veterinarian to discuss selection and breeding systems. Consider natural and artificial breeding practices. Address only those technologies used in relation to a specific animal. Consider growth and development patterns in relation to the age of an animal.
Management Techniques	• address legal considerations through plans for managing a boarding or training facility; e.g., – environmental considerations – safety and health inspection/regulation • describe procedures used to maintain quality of the animal breed; e.g., – breed association standards/regulations – showing/judging systems and standards • maintain appropriate record keeping systems regarding animal ancestry and history; e.g., – pedigrees and breeding records – parturition records – performance information.	Invite a guest speaker from an animal breeding association. Organize a judging competition on a specific animal breed. Discuss the importance of breeding records. Examine registration and transfer forms.

MODULE AGR308: FLORISTRY II

Level: **Advanced**

Theme: **Technology and Applications**

Prerequisite: **Floristry I (AGR208)**

Module Parameters: **Plant potting/flower arrangement room with refrigeration**

Students demonstrate knowledge of the practices involved in providing floral design and interior plantscape services, focusing attention on design elements, interior plant care, floral services and marketing practices.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • design and construct fresh, dried and artificial floral arrangements	*Assessment of student achievement will be based on:* • **identification** of at least 20 different cut flowers and greenery used in floral design • a **concept test** in which the student demonstrates knowledge of: – basic principles of design, including rhythm and harmony, depth and line, texture and focal point – the colour wheel and basic colour theory • **demonstration** of advanced design techniques used in preparing crescent-, hogarth-, T- and L-shaped floral arrangements • the **design and construction** (using fresh, dried and/or artificial materials) of floral arrangements for special purposes and occasions, including: – a horizontal table centre with candle – two triangular arrangements – a hogarth curve added to a wreath – a hand-tied bouquet – a presentation bouquet – a cascade bouquet – a European style arrangement *Assessment Tools (to be developed)* *Floral Designs, Appendix 3.3; Projects Record, Appendix 3.4*	40
• demonstrate practical skills used to maintain indoor plantscapes	• **identification** of at least 20 different indoor plants and gift plants, and the cultural requirements of each • a **concept test** in which the student demonstrates knowledge of legislation and safe practices regarding the handling, mixing and application of plant pesticides	40

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:* • **demonstration of practical skills** used to maintain an indoor plantscape. Practical skills to include: – adjusting/regulating light – monitoring growth media – watering and fertilizing – controlling pests – pruning and removal of waste materials – rotation of plants *Assessment Tools (to be developed)* *House Plant Care, Appendix 3.5*	
• explain techniques used to manage services and market products within a floral industry	• **calculations** that determine the cost and retail price of floral arrangements • the **design and construction** of a floral display that advertises and promotes a seasonal product and/or service *Assessment Tools (to be developed)* *Horticulture Work Ethic, Appendix 3.6*	20
• demonstrate effort to refine basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – being innovative – managing resources – teamwork, leadership and service. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Design Elements	*The student should:* • identify cut flowers and greenery used in floral design, explaining the advantages and disadvantages of each • explain and apply basic principles of design; e.g., – line, form, pattern and texture – colour, balance and rhythm – scale and proportion – harmony, contrast and repetition • explain the colour wheel and basic colour theory • spray tint and/or dip dye fresh and dried floral products • demonstrate advanced design techniques used in floral arrangements; e.g., – crescent – hogarth–shaped – T–shaped – L–shaped • design and construct fresh, dried and/or artificial floral arrangements for special purposes and occasions; e.g., – calendar events – weddings – funerals – hospitals.	Subscribe to *Florists' Review* (monthly periodical) Visits to a local florist shop. Identify on-site at least 20 different cut flowers and/or greenery. Review safety practices PRIOR to practical activities. Apply principles of: • rhythm and harmony • depth and line • texture • focal point. Practical skills should be demonstrated to industry standards (see "Flowers Canada Accreditation Program").
Plantscape Maintenance	• identify indoor plants and gift plants, explaining the cultural requirements of each; e.g., – light intensity and duration – water and soil conditions – temperature and humidity • assess the placement of indoor plants by applying knowledge of their cultural requirements • identify and explain sources of environmental stress for indoor plants; e.g., – central heating systems – air conditioning • explain legislation and safe practices regarding the handling, mixing and application of plant pesticides	Identify on-site at least 20 different indoor plants and/or gift plants. Perform general care of flowering plants and tropical foliage plants in home, school or office for at least three weeks. Keep a daily log of maintenance activities.

Concept	Specific Learner Expectations	Notes
Plantscape Maintenance (continued)	*The student should:* • plan and implement a maintenance routine for an indoor plantscape; e.g., – adjust/regulate light – monitor growth media – water and fertilize – control pests – prune and remove waste material – rotate plants • demonstrate diagnostic skills regarding common plant problems; e.g., – soil/growing medium – water and drainage – fertilizers/growth stimulants – pests, diseases and other disorders.	Suggested resources: • *Landscaping Principles and Practices* • *The Commercial Greenhouse* • *The Houseplant Expert.*
Floral Services	• demonstrate knowledge of plant and flower management practices; e.g., – select and condition cut flowers and foliage – prepare containers for flowers – water and fertilize indoor plants – dress indoor plants – control insects and plant diseases – practice sanitation and cleanliness – wrap/package floral products for delivery • address legal considerations in management plans for a floral service; e.g., – environmental considerations – inspection, regulation and quality control • design and construct a floral display that advertises and promotes a seasonal product and/or service.	Consider daily work ethic: • attendance • punctuality • use of time • group skills/ attitudes • respect for property • clean-up. Distinguish between wholesale and retail. Calculate cost and price of floral arrangements.

MODULE AGR309: MARKETING II

Level: **Advanced**

Theme: **Technology and Applications**

Prerequisite: **Marketing I (AGR209)**

Module Parameters: **Access to an agriculture or horticulture industry**

Students explain specialized applications of marketing within an agriculture or horticulture industry, focusing attention on regulatory structures and policies that influence supply of a commodity, product or service.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• describe past and present trends in the regulated marketing of an agricultural commodity, product or service	• a **survey of factors** that have affected the marketing of a commodity, product or service. Survey to include: – consumer trends – trade liberalization – globalization of markets – environmental concerns – subsidy policies • a **comparison of approaches** used to market the commodity, product or service in Canada with approaches used in other nations	20
• research regulatory structures and policies that influence supply of the commodity, product or service	• a **concept test** in which the student demonstrates knowledge of regulatory structures and policies that influence supply of a commodity, product or service. Concept test to include questions on: – supply management, and the differences between open and closed marketing systems – the role and impact of regulatory systems and strategies used in marketing – specific marketing structures used to facilitate exchange of a commodity, product or service – the impact of government policies and legislation on marketing activities within the industry	50

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• explain factors that affect decisions to market the commodity, product or service	• formulation of a strategy for marketing a commodity, product or service (e.g, marketing board, cooperative, direct sale). Strategy to include analysis of at least six factors that affect marketing decisions, such as: – supply, quality and/or pricing – current market information – transportation requirements – time constraints on perishable products – international and domestic trade rules – income support programs and subsidies	30
• demonstrate effort to refine basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing learning – being innovative – communication. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Past and Present Trends	*The student should:* • describe past and present trends in the regulated marketing of an agricultural commodity, product or service • examine factors that have affected marketing practices within the industry; e.g., – consumer trends – trade liberalization – globalization of markets – environmental concerns – subsidy polices • compare approaches used to market the commodity, product or service in Canada with approaches used in other nations; e.g., – United States – nations of the Pacific Rim – Europe.	

Concept	Specific Learner Expectations	Notes
	The student should:	
Structures and Policies	• identify economic factors that affect marketing activities within the industry; e.g., – law of supply and demand – price determination and the futures market – comparative advantage	Research steps in "hedging".
	• explain the concept of supply management, and differences between non-regulated (open) and regulated (closed) marketing systems	
	• explain the role and impact of regulatory systems and strategies used in marketing the commodity, product or service; e.g., – marketing boards and cooperatives – quota systems and monopolies	
	• identify marketing structures used to facilitate commodity exchange; e.g., – Winnipeg Commodity Exchange – Omaha Market Exchange – Chicago Grain Exchange	
	• assess the impact of government policies and legislation on marketing activities within the industry; e.g., – federal, provincial and international trade agreements – transportation policies – non-trade (health and safety) standards	Research influence of: • GATT (General Agreement on Tariffs and Trade) • NAFTA (North American Free Trade Agreement)
	• explain the function of income stabilization programs, and their effect on long- and short-term market trends.	Research influence of: • GRIP (Gross Revenue Insurance Plan) • NISA (Net Income Stabilization Account)
Marketing Decisions	• identify factors that influence decisions to market the commodity, product or service; e.g., – commodity supply, quality and pricing – financial constraints, including capital, credit and cash flow – time constraints on perishable products – transportation requirements	Contact the Alberta Wheat Pool (Farm Information Services) regarding marketing simulation programs.
	• suggest ways in which relevant trade policies and regulations may influence marketing decisions; e.g., – international and domestic trade rules – transportation policies – income support programs and subsidies	Contact Alberta Agriculture (Farm Business Management Branch) regarding bulletin board systems.

Concept	Specific Learner Expectations	Notes
Marketing Decisions (continued)	*The student should:* • consider strategies for gathering current market information; e.g., – publications and journals – private consultation – radio and television – data base • identify and assess viable alternatives for marketing the commodity, product or service; e.g., – marketing board – cooperative – direct sale.	

MODULE AGR310: APPLICATIONS OF BIOTECHNOLOGY

Level: **Advanced**

Theme: **Technology and Applications**

Prerequisite: **None**

Parameters: **Access to current resources on applications of biotechnology in agriculture**

Students present the results of research on applications of biotechnology in agriculture and food production.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• describe the history and development of biotechnology	• a concept test in which the student demonstrates knowledge of: – the nature of biotechnology – a historical perspective on methods used to alter plant and animal characteristics – current techniques and procedures used in biotechnology – present and emerging applications of biotechnology in Alberta's economy	25
• explain applications of biotechnology in agriculture and food production	• a survey of one or more applications of biotechnology in each of the following areas of agriculture: – product and market development – industry diversification – production efficiency – disease and pest control The survey will include economic, environmental and ethical issues related to each application of biotechnology, possible effects on producers, processors, consumers and governments, and the role of legislation in regulating related developments	25

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• conduct research on a recent development in biotechnology	• a **research project** in which the student develops and presents a plan for solving a problem in agriculture through application of biotechnology. The research project will include: – definition of a problem in agriculture – key stakeholders – proposed research and funding partnerships – application of principles and tools of biotechnology – benefits and costs to industry, society and the environment – recommendations regarding management actions and further research	50
• demonstrate effort to refine basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – ethics – communication – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Nature and History	*The student should:* • explain how biotechnology involves the altering of cells and organisms to produce goods and services • provide a historical perspective on methods by which the characteristics of plants and animals have been altered; e.g., – natural selection – selective breeding – genetic engineering	Discuss strengths/ weaknesses of different plant or animal characteristics.

Concept	Specific Learner Expectations	Notes
Nature and History	*The student should:* • describe basic vocabulary and techniques used in genetic engineering; e.g., – chromosome – gene – gene mapping – gene splicing – cloning • outline present and emerging applications of biotechnology in major sectors of Alberta's economy; e.g., – agriculture – health care – mining – forestry – energy – tourism.	Selecting and breeding desirable characteristics.
Applications	• describe specific applications of biotechnology in agriculture and food production; e.g., – product and market development – industry diversification – production efficiency – disease and pest control • analyze environmental, economic and ethical issues related to developments in biotechnology; e.g., – use of natural resources – control and patenting of life forms – impact of genetically altered organisms – food quality and safety – world food supply • predict possible effects of new biotechnologies on producers, processors, consumers and governments • explain the role of legislation in regulating developments in biotechnology.	Suggested video: *Guess What's Coming to Dinner.* Artificial insemination. Embryo transplants. Use of hormones and growth supplements. Risks and benefits.

Concept	Specific Learner Expectations	Notes
Research Project	*The student should:* • identify a specific problem in agriculture and food production recently addressed through biotechnology; e.g., – production costs – product quality – market supply – environmental impact • identify key stakeholder groups affected by the problem • describe funding and partnerships that were established to address the problem • explain applications of biotechnology in dealing with the problem; e.g., – principles of genetic engineering – scientific design – experimental outcomes • assess the social, economic and environmental consequences of experimental outcomes • make recommendations regarding the use of biotechnology and practical solutions to the problem; e.g., – management actions – further research.	Keep research projects relevant to personal needs and living experiences.

MODULE AGR311: WATER MANAGEMENT

Level: **Advanced**

Theme: **Management and Conservation**

Recommended Prerequisite/ Corequisite: **Resource Management and Conservation (AGR111)**

Module Parameters: **Access to government agencies responsible for agriculture management and resource conservation**

Students explain principles of water management, and establish appropriate water management practices for an agriculture or horticulture enterprise.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• **describe the hydrologic cycle**	• **diagrammatic illustration** of the hydrologic cycle depicting precipitation, evaporation, transpiration, condensation and groundwater flow *Assessment Tools (to be developed)* *Water Cycle, Appendix 3.1* • **demonstration** of evaporation, transpiration and condensation in a laboratory situation *Assessment Tools (to be developed)* *Laboratory Demonstration Procedures, Appendix 3.2* • **written/verbal explanation** of changes that occur to water as it is recycled in the natural environment	10
• **identify water sources and water quality factors important to agriculture**	• **identification** (on an aerial photograph and/or topographic map) of the major sources of surface water in Alberta • **illustration** of at least two on-site systems used to collect and distribute water for agriculture *Assessment Tools (to be developed)* *Evaluating Project Work, Appendix 3.3* • the **results of research** on chemical, physical and biological characteristics of water important to plants and animals	10
• **explain how agriculture affects the water resource at local and global levels**	• a **three- to five-page report** that describes the impact of agriculture on water quality at local and global levels. Report to address: – land clearing and pasturing – soil cultivation	40

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • explain how agriculture affects the water resource at local and global levels (continued)	*Assessment of student achievement will be based on:* – use of chemical fertilizers and pesticides – irrigation and drainage practices *Assessment Tools (to be developed)* *Descriptive or Thematic Web, Appendix 3.4* • **specific examples** of agricultural practices within a given region of Alberta that cause physical, chemical and biological changes to occur in water • **participation in debate** of the global issue involving agriculture and the water resource *Assessment Tools (to be developed)* *Debate Strategy: Formal and Informal Debates, Appendix 3.5* *The Living Flow—Water in Alberta (Alberta Environment)*	
• describe techniques used to manage water for the benefit of agriculture and the environment	• **practical demonstrations** of: – at least three technologies used to manage limited and/or excess water supplies – at least three practices used to maintain water quality – at least two methods of treating waste water • **establishment of a water budget** for an agriculture enterprise that addresses: – available surface and groundwater supplies – water requirements according to estimates of consumption – management practices that compensate for water deficiencies and/or environmental concerns *Assessment Tools (to be developed)* *Sample Management Technique: What About Our Wetlands?, Appendix 3.6*	40
• demonstrate effort to refine basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing learning – managing resources – communication *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Hydrologic Cycle	*The student should:* • define and diagramatically illustrate the water cycle • describe the roles of evaporation, precipitation, run-off and infiltration in the water cycle • explain physical, chemical and biological changes in water as it is cycled in the natural environment.	Explain the role of the hydrologic cycle in replenishing water supplies.
Water Sources and Quality	• describe the main sources of water for agriculture; e.g., – ground water – surface water – precipitation • describe on-site systems used to collect and distribute water for agriculture • describe and give examples of physical, chemical and biological characteristics of water important to plants and animals; e.g., – turbidity, temperature, odour and taste – dissolved oxygen, pH, mineral content – bacteria, viruses, algae and plankton • perform tests to determine the characteristics of water and its suitability for an agricultural use.	Investigate: • ground water reserves • major surface water resources • precipitation patterns. Well-witching demonstrations. Interpret water test results for specific uses in agriculture. Water hardness test. Determine water requirements for a plant/animal production enterprise.
Agriculture Impacts	• explain how agricultural practices may affect the water resource at local and global levels; e.g., – land clearing – overgrazing – soil cultivation – use of chemical fertilizers and pesticides – irrigation and draining practices – animal wastes • describe the effects of erosion and siltation on water quality • relate specific agricultural practices to physical, chemical and biological changes that occur in the water resource • debate a global issue regarding the impact of agriculture on water supply and/or water quality.	Consider impacts of limited/excess water supplies on: • humans • livestock • crops • wildlife • ecosystems. Investigate on-site collection systems. Explain "static level" and "drawdown" in relation to a farm well.

Concept	Specific Learner Expectations	Notes
Water Management Practices	*The student should:* • describe and assess techniques used to manage limited and excess water supplies in agriculture; e.g., – irrigation, storage, recycling – diversion, drainage, flood control	Cropping rotations. Animal waste practices. Wetlands Management. Assess the potential of existing water supplies to meet projected water requirements for a specific agriculture venture.
	• identify and apply treatments for enhancing water quality both before and after use in agriculture	Explain how agriculture can assist in treating municipal wastes.
	• conduct research on forms of water ownership and legal aspects of water control; e.g., – public, private and deeded ownership – government controls on pollution	Examples: • water rights • control of effluent disposal and pollution • diversion of natural waterways.
	• describe and assess agriculture practices aimed at maintaining water quality; e.g., – cropping rotations – management of animal wastes – conservation tillage – optimal fertilizer and pesticide management	Compare agriculture practices in two locales having significant variance in their water resources.
	• explain how the maintenance of wetlands contributes to water management.	See print and video materials in "Wetland Environments" kit (Ducks Unlimited). Kit can be obtained through FEESA.

MODULE AGR312: SOILS MANAGEMENT II

Level: **Advanced**

Theme: **Management and Conservation**

Prerequisite: **Soils Management I (AGR212)**

Module Parameters: **Science laboratory and land laboratory**

Specific learner expectations in Soils Management I and II are consistent with Soils Investigations (SOIL 100–35) at Olds College. Teachers should contact the Registrar's Office, Olds College, regarding transfer of credit for competencies developed in AGR212 and AGR312.

Students demonstrate knowledge of appropriate soil testing and amending techniques, and interpret soil survey maps and reports.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • analyze the nutrient requirements of plants and select appropriate fertilization techniques	*Assessment of student achievement will be based on:* • given a minimum of 20 questions on the nutrient requirements of plants and soil fertility, **correct response** to 75% of the questions *Assessment Tools (to be developed)* *Exemplar Questions: Soil Fertility, Appendix 3.7* • **practical experiences** in which the student will calculate an appropriate blend of fertilizer based upon plant nutrient requirements	40
• demonstrate appropriate soil sampling techniques and interpret soil test reports	• given a minimum of 20 questions on soil sampling and testing, **correct response** to 75% of the questions *Assessment Tools (to be developed)* *Exemplar Questions: Soil Sampling and Testing, Appendix 3.8* • **practical experiences** in which the student will: – demonstrate accurate soil sampling techniques – read and interpret a soil test report	20
• describe the legal location of a parcel of land using the Western Grid Survey System	• given a minimum of 20 questions on the Western Grid Survey System, **correct response** to 75% of the questions *Assessment Tools (to be developed)* *Exemplar Questions: Western Grid Survey System, Appendix 3.9*	10

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • read and interpret soil survey maps and reports	*Assessment of student achievement will be based on:* • given a minimum of 20 questions on soil survey maps and reports, **correct response** to 75% of the questions *Assessment Tools (to be developed)* *Exemplar Questions: Soil Survey Maps and Reports, Appendix 3.10* • **practical experiences** in which the student will read and interpret a soil survey map and report	30
• demonstrate effort to refine basic competencies.	• observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – managing learning – managing resources – communication *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Soil Fertility	*The student should:* • list the names and sources of essential nutrients and macronutrients for plants • describe soil colloids and their role in storing and releasing plant nutrients • identify major fertilizer nutrients and describe their benefits to plant growth • distinguish between natural and synthetic fertilizers, and explain the advantages and disadvantages of each • define fertilizer grade and give examples of commonly used grades • assess the pros and cons of specialty fertilizer products • describe common methods of fertilizer application • calculate an appropriate amount and blend of fertilizer based upon plant nutrient requirements.	Grow plants under hydroponic conditions to observe macro nutrient deficiencies. Contact Department of Instructional Design; Olds College, for additional support materials. Invite a District Agriculturalist as a resource person.

Concept	Specific Learner Expectations	Notes
Soil Testing	*The student should:* • suggest reasons for soil testing • identify major soil nutrients and soil quality factors evaluated through a soil test • describe the steps involved in conducting a soil test; e.g., – soil sampling – laboratory analysis – interpretation of results • demonstrate accurate soil sampling techniques • describe the major elements of a soil test report; e.g., – soil and cropping information – fertilizer recommendations – soil analysis results – yield increase data • read and interpret a soil test report.	Collect soil samples in local area and obtain laboratory analysis. Interpret laboratory report and apply to production methods.
Western Grid Survey System	• identify and describe components of the Western Grid Survey System; e.g., – lines of latitude and longitude – townships and ranges – sections and legal subdivisions – roads • determine the area of a parcel of land based upon information provided through its legal land description • describe and provide reasons for correction lines. partial sections and acreage anomalies • locate a specific parcel of land on a soil map by applying knowledge of its legal land description.	Obtain survey maps of local area. Locate known reference points on the maps.

Concept	Specific Learner Expectations	Notes
Soil Survey Maps and Reports	*The student should:* • describe key components of the Canada Land Inventory (CLI) system; e.g., – soil classes and subclasses – climatic subregions • determine the agricultural capacity of a given piece of land by interpreting a CLI Soil Capability for Agriculture map • consider the strengths and limitations of information provided through CLI maps in establishing agriculture management and conservation practices • describe the nature and purpose of information conveyed through a soil survey map and report; e.g., – overview of natural environment – classification of soils – potential land use • identify and explain components of a soil survey map; e.g., – map units – map legend – map symbols – reference section – key map • read and interpret a soil survey map and report.	Read and interpret local soil survey maps and reports. Invite a District Agriculturalist as a resource person.

MODULE AGR313: ENVIRONMENTAL CONSERVATION AND CONSEQUENCES

Level: **Advanced**

Theme: **Management and Conservation**

Prerequisite: **None**

Module Parameters: **Access to government and/or community agencies responsible for agriculture management and resource conservation**

Students examine the impact of a range of plant and animal production practices on the environment, and propose strategies for ensuring the sustainable use of natural resources.

Curriculum and Assessment Standards

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will:	*Assessment of student achievement will be based on:*	
• describe the structure and functioning of ecosystems	• a **concept test** in which the student demonstrates knowledge of interrelationships among living and non-living ecosystem components. The test will include questions on: – the relationship of soil, water and air characteristics to plant and animal health/distribution – interactions and dependencies among living organisms – natural recycling processes that involve soil, water and air	20
• explain potential impacts of a range of agricultural practices on environmental factors	• **descriptive accounts** of five agricultural practices and the potential impacts of each on land, water, air and wildlife	30
• propose strategies for ensuring the sustainable use of natural resources	• a **definition and comparison** of conservation, preservation and sustainable production • the **development of a management strategy** for a production venture that takes into account sustainable use of natural resources. The management strategy will address: – multiple land use – soil fertility and conservation – water quality and the hydrologic cycle – interrelationship among domestic and non-domestic plant and animal species – relevant government policies and legislation	50

Module Learner Expectations	Assessment Criteria and Conditions (Draft)	Weighting (%)
The student will: • demonstrate effort to refine basic competencies.	*Assessment of student achievement will be based on:* • observations of individual effort and interpersonal interaction during the instructional period, emphasizing: – being innovative – ethics – managing resources – demonstrating responsibility. *Assessment Tools* *Observation Checklist: Basic Competencies*	No mark

Concept	Specific Learner Expectations	Notes
Dynamic Ecosystems	*The student should:* • identify major living and non-living ecosystem components; e.g., – soil, water and air – domestic/non-domestic plant and animal species – climate and temperature • describe interrelationships among ecosystem components; e.g., – relationship of soil, water and air characteristics to plant and animal distribution/health – interactions and dependencies among living organisms • explain natural recycling processes that involve soil, water and air; e.g., – exchange of gases – water cycle – nutrient cycles.	Suggested resource: "Wetland Environments" (print and video materials available from FEESA).

Concept	Specific Learner Expectations	Notes
Environmental Impacts	*The student should:* • explain the impact of deforestation, land clearing and cultivation practices on ecosystems • describe ways in which water diversion and irrigation projects have changed the environment • describe potential impacts of pesticides, fertilizers and animal wastes on soil, water and air characteristics • explain potential impacts of selective breeding and genetic engineering on biodiversity of plant and animal populations • identify environmental pollutants resulting from large-scale and specialized production practices.	
Environmental Management	• define conservation, preservation and sustainable production • suggest a rationale for the retention of land as a natural habitat • explain applications of multiple land use in an agriculture enterprise • explain the benefits and costs of wetlands in an agriculture production system • describe soil management practices relevant to an agriculture production system; e.g., – soil fertility – soil conservation • describe water management practices relevant to an agriculture production system; e.g., – water quality – hydrologic cycle • identify government policies and regulations that support sustainable production practices; e.g., – environmental constraints – inspection and regulation	Computer simulations: • "Sim City" • "Sim Earth" • "Global Effect". Invite a resource person from "Ducks Unlimited" and/or other public/private agencies.

Concept	Specific Learner Expectations	Notes
Environmental Management	*The student should:* • explain how the application of specific management practices may affect the dynamics of an ecosystem • assess the benefits and costs of specific management practices in maximizing sustainable production and minimizing environmental impacts within an agriculture industry • identify potential careers in environmental management; e.g., – environmental assessment – environmental regulation.	

Agriculture

ASSESSMENT TOOLS

(Revised)

Draft, June 1995

OBSERVATION CHECKLIST: BASIC COMPETENCIES

The following basic competencies (KSA) are integrated throughout the CTS program. A student's performance and growth should be assessed through observations involving the student, the teacher, peers and others. As the student progresses through the levels, he or she builds on competencies gained in earlier levels.

	Basic Competency	Stage 1	Stage 2	Stage 3
Personal Management	Managing Learning	*The student will:* ☐ be able to identify/locate appropriate reference/ information sources ☐ identify and demonstrate a variety of learning skills and tools; e.g., learning styles/ preferences and strategies such as notemaking, concept mapping, etc.	*The student will:* ☐ apply a variety of learning styles/preferences to enhance ability to acquire new information recall and apply knowledge	*The student will:* ☐ draw and defend conclusions from available information ☐ extract rules or principles ☐ apply rules and principles to new situations
	Being Innovative	☐ recognize opportunities and problems ☐ specify goals and constraints ☐ generate alternatives ☐ consider risks ☐ evaluate and select best alternative	☐ think critically and act logically to evaluate situations, solve problems and make decisions	☐ combine ideas or information in new ways ☐ make connections between seemingly unrelated ideas ☐ prepare, validate and implement plans that reveal new possibilities
	Ethics	☐ identify appropriate ethical behaviour	☐ demonstrate appropriate ethical behaviour	☐ encourage and support others to demonstrate ethical behaviour
	Managing Resources	☐ allocate time effectively by selecting relevant, goal-related activities, ranking them in order of importance, allocating time, and preparing and following schedules.	☐ allocate materials and use facilities effectively by acquiring, storing, and distributing materials, supplies, parts, equipment, space, or final products in order to make best use of them.	☐ allocate human and other resources effectively by assessing knowledge and skills, distributing work and materials, evaluating performance and providing feedback.
Social Interactions	Communication	☐ prepare and effectively present accurate, concise written, visual and oral reports	☐ communicate thoughts, feelings, and ideas to justify or challenge a position by encouraging, persuading, convincing or otherwise motivating individuals or groups	☐ negotiate effectively by working towards an agreement that may involve exchanging specific resources or resolving divergent interests
	Teamwork, Leadership and Service	☐ participate as an effective member of a team by working cooperatively with others and contributing ideas, suggestions and effort ☐ recognize and respect peoples' diversity and individual differences	☐ serve clients and customers effectively by listening carefully to understand their needs and by providing as much assistance as possible to satisfy their expectations	☐ lead when appropriate, mobilizing the group for high performance
	Demonstrating Responsibility (Safety and Accountability)	☐ demonstrate high standards in attendance and punctuality ☐ be trustworthy and honest in dealing with others ☐ follow safe procedures consistently and recognize and eliminate potential hazards.	☐ understand and evaluate the impact on self and the organization for breaking with organizational or societal values and regulations.	☐ work hard to excel at setting and meeting goals, doing tasks, setting high standards and paying attention to important details.

ASSESSMENT TOOLS

The following pages include background information and strategies for assessing student achievement, and the assessment tools that are listed in Sections D, E and F of this Guide.

This section of the Guide to Standards and Implementation has been designed to provide a common set of assessment tools that can be applied in each module in CTS throughout the province. The goal is to establish assessment standards that are fair and credible, and challenge junior and senior high school students as they proceed through the CTS program.

These tools will assist teachers throughout the province to more consistently assess student achievement. The purpose of expanding on the assessment standards is to:

- increase confidence among students, parents, business/industry and post-secondary that students can demonstrate the competencies specified in the modules they have completed
- encourage fairness and equity in how students' efforts are judged
- enable learners to focus effort on key learnings
- support teachers and community partners in planning and implementing CTS.

These tools are in draft form and are being validated between now and 1997 during the optional stage of CTS implementation

Assessing Student Achievement in CTS
Assessing Student Achievement in Agriculture Strand (to be developed)

Assessment Tools Generic to CTS
- Basic Competencies Reference Guide

Assessment Tools Generic to Agriculture
- AGR-LAB: Assessment Framework: Lab Investigations
- AGR-RES: Assessment Framework: Research Process
- AGR-PRE: Assessment Framework: Presentation/Reports
- AGR-ISS: Assessment Framework: Issue Analysis
- AGR-NEG: Assessment Framework: Negotiation and Debate

Assessment Tools Specific to Modules in Agriculture
- AGR204-1: Guide To Identification: Anatomical Structures - Beef Cattle
- AGR204-2: Research Processes: Animal Types and Breeds
- AGR204-3: Task Checklist: Animal Production
- AGR204-4: Research Processes: Careers in Animal Production
- AGR205-1: Presentations/Reports: Agrifood Products
- AGR205-2: Portfolio: Profile of an Agrifoods Industry
- AGR205-3: Research Processes: Careers in the Agrifood Industry
- AGR208-1: Guide To Cut Flower and Interior Plant Identification
- AGR208-2: Task Checklist: Floristry I
- AGR208-3: Product Assessment: Floral Arrangements

AGR208-4: Lab Assessment: Floristry I
AGR208-5: Research Processes: Careers in Retail Floristry
AGR212-1: Investigations: Soil Profile Analysis
AGR212-2: Lab Investigations: Soil Texturing
AGR212-3: Lab Investigations: Soil Acidity and Conductivity
AGR301-1: Global Issues in Agriculture
AGR301-2: Issue Analysis: Social, Economic and Environmental Perspectives
AGR301-3: Research Processes: Local and Global Issues in Agriculture
AGR301-4: Negotiation and Debate: Issues in Agriculture
AGR301-5: Presentations/Reports: Developing a Position on an Issue in Agriculture

ASSESSING STUDENT ACHIEVEMENT IN CTS

The CTS assessment standards assess two basic forms of competency:

- What a student **can** ***do***?
  - **make** a product (e.g., wood bowl, report, garment)
  - **demonstrate** a process
    - strand-related competencies (e.g., keyboarding, hair cutting, sewing techniques, lab procedures)
    - basic competencies (e.g., resource use, safety procedures, teamwork)

- What a student ***knows?***
  - knowledge base needed to demonstrate a competency (link theory and practice).

CTS Defines *Summative* Assessment Standards

The assessment standards and tools defined for the CTS modules, referenced in Sections D, E and F of this Guide, focus on the final (or summative) assessment of student achievement.

Assessment throughout the learning period (or formative assessment) will continue to assess how students are progressing. Teachers direct and respond to students' efforts to learn – setting and marking tasks and assignments, indicating where improvement is needed, sending out interim reports, congratulating excellence, etc.

Teachers will decide which instructional and assessment strategies to apply during the formative learning period. As formative and summative assessment are closely linked, some teachers may wish to modify the tools included in this section to use during the instructional process. Teachers may also develop their own summative assessment tools as long as the standards are consistent with the minimum expectations outlined by Alberta Education.

Grading and Reporting Student Achievement

When a student can demonstrate ALL of the exit-level competencies defined for the module (Module Learner Expectations), the teacher will designate the module as "successfully completed." The teacher will then use accepted grading practices to determine the percentage grade to be given for the module–a mark not less than 50%.

The time frame a teacher allows a student to develop the exit-level competency is a local decision. NOTE: The Senior High School Handbook specifies that students must <u>have access to 25 hours of instruction</u> for each credit. Students may, however, attain the required competencies in less time and may proceed to other modules.

Teachers are encouraged to consult their colleagues to ensure grading practices are as consistent as possible.

High school teachers may wish to refer to "Directions for Reporting Student Achievement in CTS" for information on how to use the CTS course codes to report credits students have earned to Alberta Education. (Copies of this document have been forwarded to superintendents and senior high school principals.)

Components of Assessment Standards in CTS

The following components are included in each module:

- **module learner expectations** (shaded left column of the module) define the exit-level competencies students are expected to achieve to complete a module. Each MLE defines and describes critical behaviors that can be measured and observed. The student must meet the standard specified for <u>ALL</u> MLEs within a module to be successful. *(MLEs will not change until 1997 when minor adjustments may be made to update and clarify wording.)*

- **suggested emphasis** (right column of the module) provides a guideline for the relative significance of each MLE and can be used to organize for instruction. (*In draft until early 1997, revisions to selected modules will be distributed in June 1995 and 1996 with final revisions in June 1997.)*

- **conditions and criteria** (middle column of the module) set the framework for the assessment of student competency, specifying the minimum standard for performance and including a reference to assessment tools, where appropriate. (*In draft until early 1997, revisions to selected modules will be distributed in June 1995 and 1996 with final revisions in June 1997.)*

  Conditions outline the specifications under which a student's competency can be judged. For example, the conditions could specify whether the assessment should be timed or not, or if the student should be allowed to access to support resources or references.

  Criteria define the behaviors that a student must demonstrate to meet the designated standard. For example, the criteria could describe the various techniques that must demonstrated when using a tool, and/or describe the minimum components of a project the student must complete.

  Standard -The *standard* may be defined by (1) assessment tools, which are referenced in this section (or sometimes in approved learning resources) and/or (2) exemplars of student work (to be developed and distributed as "Reference Sets" in June 1997).

  Assessment Tools included in this section of the Guide (e.g. checklists, rubrics/rating scales) tend to be of two types:

  - tools generic to a strand or to the entire CTS program; e.g., a standard 4-point Project Assessment Scale / Rubric is used in all strands. Other generic tools being developed include assessing reports and presentations and lab safety checklists. *(Names of these tools include the strand code (e.g., "INF" for Information Processing) and a code for the type of tool (e.g., "TDENT" for Text-Data Entry).)*

  - tools specific to a module; e.g., assessment checklist for assessing a venture plan in Enterprise and Innovation or a checklist for sketching, drawing and modeling in Design Studies. *(Names of these tools include the module code; e.g., "INF101-1" indicating that it is the first module-specific tool used in Information Processing 101.)*

  - Exemplars / Reference Sets : Selected examples of student work in print, audio, video and/or CD-ROM formats are scheduled to be available by June 1997. These exemplars will supplement the assessment tools and help teachers decide if a student's work is at standard, above standard, or not yet at standard.

Development and Validation Processes

The "Conditions and Criteria" and "Suggested Emphasis" columns and related assessment tools are being validated 1994-97, with extensive input from teachers, professional associations / contacts and post-secondary institutions. The goal is to prepare well-structured assessment standards and related assessment tools that:

- establish an appropriate level of challenge and rigor
- relate directly to the type of learning described in the curriculum standard
- are easy to understand
- efficient to implement
- can provide a consistent measure of what was expected to be measured.

BASIC COMPETENCIES REFERENCE GUIDE

The following basic competencies (KSA) are integrated throughout the CTS program. A student's performance and growth should be assessed through observations involving the student, the teacher, peers and others. As the student progresses through the levels, he or she builds on competencies gained in earlier levels.

	Basic Competency	Stage 1	Stage 2	Stage 3
Personal Management	Managing Learning	*The student will:* ☐ be able to identify/locate appropriate reference/ information sources ☐ identify and demonstrate a variety of learning skills and tools; e.g., learning styles/ preferences and strategies such as notemaking, concept mapping, etc.	*The student will:* ☐ apply a variety of learning styles/preferences to enhance ability to acquire new information recall and apply knowledge	*The student will:* ☐ draw and defend conclusions from available information ☐ extract rules or principles ☐ apply rules and principles to new situations
	Being Innovative	☐ recognize opportunities and problems ☐ specify goals and constraints ☐ generate alternatives ☐ consider risks ☐ evaluate and select best alternative	☐ think critically and act logically to evaluate situations, solve problems and make decisions	☐ combine ideas or information in new ways ☐ make connections between seemingly unrelated ideas ☐ prepare, validate and implement plans that reveal new possibilities
	Ethics	☐ identify appropriate ethical behaviour	☐ demonstrate appropriate ethical behaviour	☐ encourage and support others to demonstrate ethical behaviour
	Managing Resources	☐ allocate time effectively by selecting relevant, goal-related activities, ranking them in order of importance, allocating time, and preparing and following schedules.	☐ allocate materials and use facilities effectively by acquiring, storing, and distributing materials, supplies, parts, equipment, space, or final products in order to make best use of them.	☐ allocate human and other resources effectively by assessing knowledge and skills, distributing work and materials, evaluating performance and providing feedback.
Social Interactions	Communication	☐ prepare and effectively present accurate, concise written, visual and oral reports	☐ communicate thoughts, feelings, and ideas to justify or challenge a position by encouraging, persuading, convincing or otherwise motivating individuals or groups	☐ negotiate effectively by working towards an agreement that may involve exchanging specific resources or resolving divergent interests
	Teamwork, Leadership and Service	☐ participate as an effective member of a team by working cooperatively with others and contributing ideas, suggestions and effort ☐ recognize and respect peoples' diversity and individual differences	☐ serve clients and customers effectively by listening carefully to understand their needs and by providing as much assistance as possible to satisfy their expectations	☐ lead when appropriate, mobilizing the group for high performance
	Demonstrating Responsibility (Safety and Accountability)	☐ demonstrate high standards in attendance and punctuality ☐ be trustworthy and honest in dealing with others ☐ follow safe procedures consistently and recognize and eliminate potential hazards.	☐ understand and evaluate the impact on self and the organization for breaking with organizational or societal values and regulations.	☐ work hard to excel at setting and meeting goals, doing tasks, setting high standards and paying attention to important details.

ASSESSMENT FRAMEWORK: LAB INVESTIGATIONS

AGR-LAB

INTRODUCTORY	INTERMEDIATE	ADVANCED
The student is able to:	*The student is able to:*	*The student is able to:*
Management • prepare self for task • organize and work in an orderly manner • carry out instructions accurately • use time effectively	**Management** • prepare self for task • organize and work in an orderly manner • interpret and carry out instructions accurately • plan and use time effectively • adhere to routine procedures	**Management** • prepare self for task • organize and work in an orderly manner • interpret and carry out instructions accurately • plan and use time effectively in a logical sequence • display leadership in adhering to routine procedures • attempt to solve problems prior to requesting help
Teamwork • cooperate with group members • share work appropriately among group members	**Teamwork** • cooperate with group members • share work appropriately among group members • negotiate solutions to problems	**Teamwork** • cooperate with group members • share work appropriately among group members • negotiate with sensitivity solutions to problems • display effective communication skills
Use of Equipment and Materials • select and use appropriate equipment/materials • follow safe procedures/techniques • weigh and measure accurately • return clean equipment/materials to storage areas	**Use of Equipment and Materials** • select and use appropriate equipment/materials • model safe procedures/techniques • weigh and measure accurately • practise proper sanitation procedures • minimize waste of materials • advise of potential hazards and necessary repairs	**Use of Equipment and Materials** • independently select and use equipment/ materials • demonstrate concern for safe procedures/techniques • weigh and measure accurately and efficiently • practise proper sanitation procedures • minimize waste of materials • anticipate potential hazards and emergency response
Investigative Techniques • gather and apply information from at least one source • make predictions that can be tested • set up and conduct experiments to test a prediction • distinguish between manipulated/responding variables • obtain results that can be used to determine if some aspect of the prediction is accurate • summarize important experimental outcomes	**Investigative Techniques** • gather and apply information from a variety of sources • make predictions that can be tested • plan, set up & conduct experiments to test a prediction • identify and explain manipulated/responding variables • obtain accurate results that confirm/reject the prediction • summarize and apply experimental outcomes	**Investigative Techniques** • use relevant information to explain observations • make predictions that can be tested • plan, set up & conduct experiments to test a prediction • analyze relationships among manipulated/responding variables • obtain accurate results that confirm/reject prediction and answer related questions • summarize, apply and evaluate experimental outcomes

INTRODUCTORY	INTERMEDIATE	ADVANCED
The student is able to:	*The student is able to:*	*The student is able to:*
Preparation and Planning • set goals and follow instructions accurately • adhere to established timelines • respond to directed questions and follow necessary steps to find answers • use time effectively	**Preparation and Planning** • set goals and establish steps to achieve them • create and adhere to useful timelines • use personal initiative to formulate questions and find answers • plan and use time effectively	**Preparation and Planning** • set clear goals and establish steps to achieve them • create and adhere to detailed timelines • use personal initiative to formulate questions and find answers • plan and use time effectively, prioritizing tasks on a consistent basis
Information Gathering and Processing • access basic in-school/community information sources • use one or more information-gathering techniques • interpret and organize information in a logical sequence • record information accurately using correct technical terms • distinguish between fact and fiction/opinion/theory • respond to feedback when current approach is not working	**Information Gathering and Processing** • access a range of relevant in-school/community resources • use a range of information-gathering techniques • interpret, organize and combine information into a logical sequence • record information accurately with appropriate supporting detail and using correct technical terms • determine accuracy/currency/reliability of information sources • gather and respond to feedback regarding approach to the task	**Information Gathering and Processing** • access a range of relevant information sources and recognize when additional information is required • demonstrate resourcefulness in collecting data • interpret, organize and combine information in creative and thoughtful ways • record information accurately with appropriate supporting detail and using correct technical terms • recognize underlying bias/assumptions/values in information sources • assess and refine approach to the task and project status based on feedback and reflection
Collaboration and Teamwork • cooperate with group members • share work appropriately among group members	**Collaboration and Teamwork** • cooperate with group members • share work appropriately among group members • negotiate solutions to problems	**Collaboration and Teamwork** • cooperate with group members • share work appropriately among group members • negotiate with sensitivity solutions to problems • display effective communication and leadership skills
Information Sharing • demonstrate effective use of one or more communication media: *e.g., written, oral, audio-visual* • communicate information in a logical sequence • use correct grammatical convention and technical terms • cite 3 or more baisic information sources	**Information Sharing** • demonstrate effective use of two or more communication media: *e.g., written, oral, audio-visual* • communicate ideas in a logical sequence with sufficient supporting detail • maintain acceptable grammatical and technical standards • cite 5 or more relevant information sources	**Information Sharing** • demonstrate effective use of a variety of communication media: *e.g., written, oral, audio-visual* • communicate thoughts/feelings/ideas clearly to justify or challenge a position • maintain acceptable grammatical and technical standards • give evidence of adequate information gathering by citing 7 or more relevant information sources

INTRODUCTORY	INTERMEDIATE	ADVANCED
The student is able to:	*The student is able to:*	*The student is able to:*
Preparation and Planning	**Preparation and Planning**	**Preparation and Planning**
• set goals and follow instructions accurately	• set goals and describe steps to achieve them	• set goals and describe steps to achieve them
• respond to directed questions and follow necessary steps to find answers	• use personal initiative to formulate questions and find answers	• use personal initiative to formulate questions and find answers
• access basic in-school/community information sources	• access a range of relevant in-school/community resources	• access a range of relevant information sources and recognize when additional information is required
• interpret and organize information into a logical sequence	• interpret, organize and combine information into a logical sequence	• interpret, organize and combine information in creative and thoughtful ways
• record information accurately using correct technical terms	• record information accurately with appropriate supporting detail and using correct technical terms	• record information accurately using appropriate technical terms and supporting detail
• use time effectively	• plan and use time effectively	• plan and use time effectively, prioritizing tasks on a consistent basis
	• gather and respond to feedback regarding approach to task an project status	• assess and refine approach to task and project status based on feedback and reflection
Presentation	**Presentation**	**Presentation**
• demonstrate effective use of at least one medium of communication:	• demonstrate effective use of at least two communication media:	• demonstrate effective use of a variety of communication media:
e.g., Written: spelling, punctuation, grammar, basic format	*e.g., Written: spelling, punctuation, grammar, format (formal/informal)*	*e.g., Written: spelling, punctuation,grammar, format (formal/informal, technical/ literary)*
Oral: voice projection, body language	*Oral: voice projection, body language, appearance*	*Oral: voice projection, body language, appearance, enthusiasm, evidence of prior practice*
Audio-Visual: techniques, tools	*Audio-Visual: techniques, tools, clarity*	*Audio-Visual: techniques, tools, clarity, speed and pacing*
• use correct grammatical convention and technical terms through proof-reading/editing	• maintain acceptable grammatical and technical standards through proof-reading and editing	• maintain acceptable grammatical and technical standards through proof-reading and editing
• provide an introduction that describes the purpose of the project	• provide an introduction that describes the purpose and scope of the project	• provide an introduction that describes the purpose and scope of the project
• communicate information in a logical sequence	• communicate ideas into a logical sequence with sufficient supporting detail	• communicate thoughts/feelings/ideas clearly to justify or challenge a positon
• state a conclusion based on a summary of facts	• state a conclusion by synthesizing the information gathered	• state a conclusion by analyzing and synthesizing the information gathered
• provide a reference list of 3 or more basic information sources	• provide a reference list that includes 5 or more relevant information sources	• give evidence of adequate research through a reference list including 7 or more relevant information sources

INTRODUCTORY	INTERMEDIATE	ADVANCED
The student is able to:	*The student is able to:*	*The student is able to:*
Preparation and Planning	**Preparation and Planning**	**Preparation and Planning**
• accurately describe an issue on which people disagree	• accurately describe an issue on which people disagree, explaining areas of disagreement	• accurately describe an issue on which people disagree, explaining specific causes of disagreement
• pose an important question regarding the issue	• pose one or more thoughtful questions regarding the issue	• pose thoughtful questions regarding the issue
• access basic in-school/community information sources regarding the issue	• access a range of relevant in-school/community resources	• access a range of relevant information sources and recognize when additional information is required
• use one or more information-gathering techniques	• use a range of information-gathering techniques	• demonstrate resourcefulness in collecting data
Analyzing Perspectives	**Analyzing Perspectives**	**Analyzing Perspectives**
• clarify different points of view regarding the issue: *e.g., social, economic, environmental*	• categorize different points of view regarding the issue: *e.g., cultural, ethical, economic, environmental, health-related*	• categorize different points of view regarding the issue: *e.g., cultural, ethical, economic, environmental, health-related, scientific, political*
• state a position on the issue and logical reasons for adopting that position	• state a position on the issue and logical reasons for adopting that position	• state a position on the issue and insightful reasons for adopting that position
• state an opposing position on the issue and logical reasons for adopting that position	• state two or more opposing positions on the issue and logical reasons for adopting each position	• state three or more opposing positions on the issue and thoughtful reasons for adopting each position
• identify sources of conflict among different positions	• describe interrelationships among different perspectives/points of view	• analyze interrelationships among different perspectives/points of view
• distinguish between fact and fiction/opinion/theory	• determine accuracy/currency/reliability of information and ideas	• recognize underlying bias/assumptions/values in information and ideas
Collaboration and Teamwork	**Collaboration and Teamwork**	**Collaboration and Teamwork**
• share work appropriately among group members	• share work appropriately among group members	• share work appropriately among group members
• respect the views of others	• respect and consider the views of others	• respect and consider the views of others
	• negotiate solutions to problems	• negotiate with sensitivity solutions to problems
Evaluating Choices/Making Decisions	**Evaluating Choices/Making Decisions**	**Evaluating Choices/Making Decisions**
• identify useful alternatives regarding the issue	• identify important and appropriate alternatives regarding the issue	• describe in detail important and appropriate alternatives regarding the issue
• establish criteria for assessing each alternative: *e.g., social, economic, environmental*	• establish knowledge- and value-based criteria for assessing each alternative: *e.g., social, economic, environmental*	• establish knowledge- and value-based criteria for assessing each alternative: *e.g., social, economic, environmental*
• select an appropriate alternative based on established criteria	• select an appropriate alternative by showing differences among choices	• select an appropriate and useful alternative by showing differences among choices
• reflect on strengths/weaknesses of decisions by considering consequences	• assess strengths/weaknesses of decisions by considering consequences	• assess strengths/weaknesses of decisions by considering consequences and implications
• communicate information in a logical sequence to justify choices/decisions made	• communicate ideas in a logical sequence with supporting detail to justify choices/decisions made	• communicate thoughts/feelings/ideas clearly to justify choices/decisions made

INTRODUCTORY	INTERMEDIATE	ADVANCED
The student is able to:	*The student is able to:*	*The student is able to:*
Preparation and Planning	**Preparation and Planning**	**Preparation and Planning**
• accurately describe an issue on which people disagree	• accurately describe an issue on which people disagree, explaining areas of disagreement	• accurately describe an issue on which people disagree, explaining specific causes of disagreement
• pose an important question regarding the issue	• pose one or more thoughtful questions regarding the issue	• pose thoughtful questions regarding the issue
• access basic in-school/community information sources regarding the issue	• access a range of relevant in-school/community resources	• access a range of relevant information sources and recognize when additional information is required
• use one or more information-gathering techniques	• use a range of information-gathering techniques	• demonstrate resourcefulness in collecting data
Analyzing Perspectives	**Analyzing Perspectives**	**Analyzing Perspectives**
• state a position on the issue and logical reasons for adopting that position	• state a position on the issue and logical reasons for adopting that position	• state a position on the issue and insightful reasons for adopting that position
• explain why the issue is important by presenting examples of possible consequences	• explain why the issue is important by presenting examples of possible consequences	• explain why the issue is important by presenting examples of possible consequences and implications
• clarify different points of view regarding the issue: *e.g., social, economic, environmental*	• categorize different points of view regarding the issue *e.g., cultural, ethical, economic, environmental, health-related*	• categorize different points of view regarding the issue: *e.g., cultural, ethical, economic, environmental, health-related, scientific, political*
• distinguish between fact and fiction/opinion/theory	• determine accuracy/currency/reliability of information and ideas	• recognize underlying bias/assumptions/values in information and ideas
Collaboration and Teamwork	**Collaboration and Teamwork**	**Collaboration and Teamwork**
• work with a range of peer members	• work with a range of peer members	• work with a wide range of peer members
• share information/opinions/suggestions through group discussion	• share information/opinions/suggestions, maintaining a balance between speaking and listening	• share information/opinions/suggestions, maintaining a balance between speaking and listening
• listen to and respect the views of others	• listen to and respect the views of others, requesting clarification as necessary from other group members	• listen to and respect the views of others, requesting clarification as necessary from other group members
Negotiating and Debating	**Negotiating and Debating**	**Negotiating and Debating**
• present a convincing argument in logical sequence supporting a position adopted on the issue	• present a convincing argument in logical sequence supporting a position adopted, conveying points in order of importance	• present a convincing argument in logical sequence supporting a position adopted, conveying points in order of importance and backing each with sound evidence
• provide a relevant response to opposing arguments	• provide a relevant and convincing response to opposing arguments	• provide a relevant and convincing rebuttal to opposing arguments
• speak clearly so the argument can be understood	• speak clearly without hesitation so the argument can be understood	• speak clearly without hesitation so the argument can be understood by all listeners
• establish a shared understanding of key alternatives and consequences relevant to the issue	• negotiate a shared agreement on preferred alternatives relevant to the issue	• negotiate a shared agreement on preferred alternatives by resolving divergent points of view

GUIDE TO IDENTIFICATION: ANATOMICAL STRUCTURES - Beef Cattle

AGR204-1

BODY, NECK & HEAD AREAS	Structural Parts	Basic Function
Basic skeletal structure	☐	☐
Pelvic area	☐	☐
Back	☐	☐
Rib cage	☐	☐
Shoulder and hips	☐	☐
Brisket	☐	☐
Neck	☐	☐
Head (e.g., horns, eyes, nose)	☐	☐
	☐	☐
	☐	☐
	☐	☐

DIGESTIVE SYSTEM	Structural Parts	Basic Function
Rumen	☐	☐
Reticulum	☐	☐
Omasum	☐	☐
Abomasum	☐	☐
Small Intestine	☐	☐
Large Intestine	☐	☐
Rectum and anus	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐

FOOT AND LEG AREAS	Structural Parts	Basic Function
Leg bone structure	☐	☐
Ankle bone structure	☐	☐
Hoof (e.g., outer shell, inner sole)	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐

MAMMARY AND REPRODUCTIVE SYSTEMS	Structural Parts	Basic Function
Udder and quarters	☐	☐
Teats and milk vein	☐	☐
Vagina, uterus, uterine horns, ovaries	☐	☐
Testicles, scrotum, penis	☐	☐
	☐	☐
	☐	☐
	☐	☐

GUIDE TO IDENTIFICATION: ANATOMICAL STRUCTURES - Beef Cattle (continued)

RESPIRATORY SYSTEM	Structural Parts	Basic Function
Nasal chamber, nostril	☐	☐
Pharynx, larynx	☐	☐
Esophagus	☐	☐
Trachea, bronchial tubes	☐	☐
Lungs	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐

STANDARD: **The student is able to identify the structural parts and basic functions of:**

- ☐ **major body, neck and head areas**
- ☐ **major foot and leg areas**
- ☐ **the digestive system**
- ☐ **the mammary and reproductive systems**
- ☐ **the respiratory system.**

REFERENCE GUIDE:
Skill Training Profiles, Alberta Green Certificate Farm Training Program

TEACHER/STUDENT REFLECTION

TASK	Student		Teacher
Planning and Presentation	4 3 2 1 0	N/A	4 3 2 1 0
Information Gathering and Processing	4 3 2 1 0	N/A	4 3 2 1 0
Content	4 3 2 1 0	N/A	4 3 2 1 0
Collaboration and Teamwork	4 3 2 1 0	N/A	4 3 2 1 0
Information Sharing	4 3 2 1 0	N/A	4 3 2 1 0

Rating Scale:

4 Met project/task objectives by independently selecting and implementing the most appropriate course of action. Problems were solved in effective and creative ways. Quality and productivity exceed standards.

3 Met project/task objectives independently, selecting and using resources/processes efficiently and effectively. No errors or deficiencies are noted. Quality and productivity consistently meet the standard.

2. Met project/task objectives with limited assistance in planning, solving problems and selecting and using resources/processes. Only minor errors/deficiencies are noted. Quality and productivity meet standards, but are occasionally inconsistent.

1 Completed task as directed, demonstrating rudimentary skills/completeness by following a guided course of action. Quality and productivity meet standard but are inconsistent.

0 Not yet completed task, major deficiencies and/or errors are evident.

N/A Not Applicable

STANDARD IS 2 IN EACH APPLICABLE TASK

TASK CHECKLIST

The student is able to:

Preparation and Planning

- ☐ set goals and establish steps to achieve them
- ☐ create and adhere to useful timelines
- ☐ use personal initiative to formulate questions and find answers
- ☐ plan and use time effectively

Information Gathering and Processing

- ☐ access a range of relevant in-school/community resources
- ☐ use a range of information-gathering techniques
- ☐ interpret, organize and combine information into a logical sequence
- ☐ record information accurately with appropriate supporting detail and using correct technical terms
- ☐ determine accuracy/currency/reliability of information sources
- ☐ gather and respond to feedback regarding approach to the task

Content

- ☐ identify and describe common classes and breeds of a livestock, poultry or specialty animal
- ☐ identify positive and negative genetic traits of a livestock, poultry or specialty animal
- ☐ identify breeds of livestock, poultry or specialty animals suited to specific production and/or market applications

Content (continued)

- ☐ explain principles of heredity and how animal characteristics are passed from generation to generation; e.g.:
  - dominant and recessive traits
  - selection criteria and procedures
- ☐ describe common breeding programs for a livestock, poultry or specialty animal; e.g.:
  - inbreeding
  - linebreeding
  - crossbreeding
- ☐ outline record keeping systems for animal ancestry and history, and procedures used to maintain quality of the animal breed; e.g.:
  - pedigrees, breeding records, parturition records
  - breed standards, showing and judging systems

Collaboration and Teamwork

- ☐ cooperate with group members
- ☐ share work appropriately among group members
- ☐ negotiate solutions to problems

Information Sharing

- ☐ demonstrate effective use of two or more communication media:
  e.g., written, oral, audio-visual
- ☐ communicate ideas in a logical sequence with sufficient supporting detail
- ☐ maintain acceptable grammatical and technical standards
- ☐ cite five or more relevant information sources.

TEACHER/STUDENT REFLECTION

ALLOCATING TIME AND MATERIALS

The student is able to:

- ☐ develop and follow a schedule of activities for accomplishing each task
- ☐ consider solutions to problems before asking for assistance
- ☐ select and use appropriate equipment and materials for the task; manage equipment and other materials in an effective manner
- ☐ follow accepted safety/sanitation procedures; use appropriate safety devices (e.g., clothing, shields, guards)
- ☐ recognize potential hazards and their possible impact on self and others; take steps to eliminate potential hazards
- ☐ conduct self-assessment of personal performance, identifying strengths and areas that need improvement
- ☐

ANIMAL HANDLING

The student is able to:

- ☐ describe normal animal behaviours in different situations; e.g.:
  - ☐ when eating
  - ☐ while being moved
  - ☐ when confined
  - ☐ during breeding activities

ANIMAL HANDLING (continued)

The student is able to:

- ☐ explain factors relevant to animal handling; e.g.:
  - ☐ instincts
  - ☐ environmental noise, heat levels and air quality
  - ☐ footing agility
  - ☐ breed, gender and age differences
  - ☐ weather
  - ☐ illness or disease
  - ☐ space requirements and confinement systems
  - ☐ tameness and flight distance
- ☐ demonstrate appropriate animal handling techniques; e.g.:
  - ☐ body stand and movement
  - ☐ appropriate use of force
  - ☐ control of noise and other environmental factors
  - ☐ use of lures (e.g., feed, whistle)
- ☐ demonstrate appropriate and safe use of structures and/or equipment in animal handling practices; e.g.:
  - ☐ buildings, fences, corrals, directional panels and/or other confinement structures
  - ☐ handling tools and aids
- ☐ demonstrate respect for animal health, safety and welfare through handling techniques that are used
- ☐ practise techniques that minimize personal hazards associated with animal handling; e.g.:
  - ☐ use of personal protective gear
  - ☐ keeping alert and focusing attention on task

CARE FOR NEWBORN

The student is able to:

- ☐ demonstrate appropriate technique to catch/hold baby animals
- ☐ clean newborn animals
- ☐ assist newborn animals to nurse

FEEDING PRACTICES

The student is able to:

- ☐ describe the basic role of protein, energy, vitamins, minerals and water in animal diet
- ☐ monitor animals and pens for adequate water supply/consumption and ensure animals are properly watered
- ☐ explain rules of thumb for determining appropriate quantities/volumes of food consumed on a daily/weekly basis
- ☐ perform routine inspection, cleaning and maintenance of feed boxes and troughs
- ☐ implement and monitor an appropriate feeding routine
- ☐ operate and maintain feed mixing, feed processing and feed handling equipment
- ☐ identify nutritional deficiencies, and explain the role of food additives and growth stimulants in animal diet

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BASIC HEALTH CARE

The student is able to:

- ☐ describe signs of animal health; e.g.:
  - ☐ movement and alertness
  - ☐ body appearance
  - ☐ appetite
- ☐ ☐ identify symptoms of ill health, and treatment for common internal/external parasites and diseases
- ☐ identify common situations that may be confused with ill health; e.g.:
  - ☐ heat and cold
  - ☐ estrus cycle
  - ☐ stress
- ☐ explain applications of immunization in animal health care
- ☐ provide routine care for weak, sick or injured animals
- ☐ administer oral medication to animals as required; apply medication to surface cuts and bruises
- ☐ take the temperature of a sick animal
- ☐ implement and maintain a manure handling system
- ☐ clean and disinfect animal pens, stalls, sheds and/or other confinement structures
- ☐

Rating Scale:

4 Met task objectives by independently selecting and implementing the most appropriate course of action. Problems were solved in effective and creative ways. Quality and productivity exceed standards.

3 Met task objectives independently, selecting and using materials/processes efficiently and effectively. No errors or deficiencies are noted. Quality and productivity consistently meet the standard.

2 Met task objectives with limited assistance in planning, solving problems and selecting and using materials/processes. Only minor errors/deficiencies are noted. Quality and productivity meet standards, but are occasionally inconsistent.

1 Completed task as directed, demonstrating rudimentary skills/completeness by following a guided course of action. Quality and productivity meet standard but are inconsistent.

0 Not yet completed task, major deficiencies and/or errors are evident.

N/A Not Applicable

STANDARD IS 2 IN EACH APPLICABLE TASK AREA

TEACHER/STUDENT REFLECTION

TASK	Student		Teacher
Planning and Presentation	4 3 2 1 0	N/A	4 3 2 1 0
Information Gathering and Processing	4 3 2 1 0	N/A	4 3 2 1 0
Content	4 3 2 1 0	N/A	4 3 2 1 0
Collaboration and Teamwork	4 3 2 1 0	N/A	4 3 2 1 0
Information Sharing	4 3 2 1 0	N/A	4 3 2 1 0

Rating Scale:

4 Met project/task objectives by independently selecting and implementing the most appropriate course of action. Problems were solved in effective and creative ways. Quality and productivity exceed standards.

3 Met project/task objectives independently, selecting and using resources/processes efficiently and effectively. No errors or deficiencies are noted. Quality and productivity consistently meet the standard.

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1 Completed task as directed, demonstrating rudimentary skills/completeness by following a guided course of action. Quality and productivity meet standard but are inconsistent.

0 Not yet completed task, major deficiencies and/or errors are evident.

N/A Not Applicable

STANDARD IS 2 IN EACH APPLICABLE TASK

TASK CHECKLIST

The student is able to:

Preparation and Planning

- ☐ set goals and establish steps to achieve them
- ☐ create and adhere to useful timelines
- ☐ use personal initiative to formulate questions and find answers
- ☐ plan and use time effectively

Information Gathering and Processing

- ☐ access a range of relevant in-school/community resources
- ☐ use a range of information-gathering techniques
- ☐ interpret, organize and combine information into a logical sequence
- ☐ record information accurately with appropriate supporting detail and using correct technical terms
- ☐ determine accuracy/currency/reliability of information sources
- ☐ gather and respond to feedback regarding approach to the task

Content

- ☐ describe one or more career clusters within the livestock production industry; e.g.:
  - primary production
  - agriscience/production management
  - support services
  - animal health technology
  - environmental management
  - education
- ☐ identify and describe occupations relevant to one or more career clusters within the livestock production industry; e.g.:

Content (continued)

  - nature of the occupation
  - duties of the worker
  - workplace conditions
  - salary/wages and employee benefits
- ☐ provide a survey of current employment statistics relevant to one or more career clusters; e.g.:
  - types of occupations
  - number of workers
  - employment trends
- ☐ identify entry requirements and training programs relevant to one or more career clusters; e.g.:
  - entrance requirements and competencies
  - type and extent of training programs
  - post-secondary institutions
- ☐ assess current and future employment opportunities and trends; e.g.:
  - local, national and international needs
  - opportunities for advancement and/or career change
  - opportunities for self-employment and entrepreneurship

Collaboration and Teamwork

- ☐ cooperate with group members
- ☐ share work appropriately among group members
- ☐ negotiate solutions to problems

Information Sharing

- ☐ demonstrate effective use of two or more communication media:
  e.g., written, oral, audio-visual
- ☐ communicate ideas in a logical sequence with sufficient supporting detail
- ☐ maintain acceptable grammatical and technical standards
- ☐ cite five or more relevant information sources.

TEACHER/STUDENT REFLECTION

TASK	Student		Teacher
Planning and Presentation	4 3 2 1 0	N/A	4 3 2 1 0
Content	4 3 2 1 0	N/A	4 3 2 1 0
Presenting/ Reporting	4 3 2 1 0	N/A	4 3 2 1 0

Rating Scale:

4 Met project/task objectives by independently selecting and implementing the most appropriate course of action. Problems were solved in effective and creative ways. Quality and productivity exceed standards.

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1 Completed task as directed, demonstrating rudimentary skills/completeness by following a guided course of action. Quality and productivity meet standard but are inconsistent.

0 Not yet completed task, major deficiencies and/or errors are evident.

N/A Not Applicable

STANDARD IS 2 IN EACH APPLICABLE TASK

TASK CHECKLIST

The student is able to:

Preparation and Planning

- ☐ set goals and describe steps to achieve them
- ☐ use personal initiative to formulate questions and find answers
- ☐ access a range of relevant in-school/community resources
- ☐ interpret, organize and combine information into a logical sequence
- ☐ record information accurately with appropriate supporting detail and using correct technical terms
- ☐ plan and use time effectively
- ☐ gather and respond to feedback regarding approach to task and project status

Content

- ☐ provide a brief introduction outlining of the nature of the agrifood industry and major topics to be discussed
- ☐ explain the social, economic and environmental significance of the agrifood industry in Alberta
- ☐ identify products and/or related services provided by the agrifood industry
- ☐ describe inputs to processing within the agrifood industry, including:
  - commodity inputs/raw materials
  - financial resources
  - human and natural resources
  - technology requirements

Content (continued)

- ☐ cite relevant supply management systems that affect industry operations; e.g.:
  - government regulations
  - board management systems
- ☐ cite relevant environmental legislation that affects industry operations; e.g.:
  - water, air and soil quality
  - land use practices
  - waste management
- ☐ provide a glossary of terms characteristic to the agrifood industry

Presenting/Reporting

- ☐ demonstrate effective use of at least two communication media:
  e.g., Written: spelling, punctuation, grammar, format (formal/informal)
  Oral: voice projection, body language, appearance
  Audio-Visual: techniques, tools, clarity
- ☐ maintain acceptable grammatical and technical standards through proof-reading and editing
- ☐ provide an introduction that describes the purpose and scope of the project
- ☐ communicate ideas into a logical sequence with sufficient supporting detail
- ☐ state a conclusion by synthesizing the information gathered
- ☐ provide a reference list that includes five or more relevant information sources.

TEACHER/STUDENT REFLECTION

TASK	Student		Teacher
Allocating Time and Materials	4 3 2 1 0	N/A	4 3 2 1 0
Profiling the Industry	4 3 2 1 0	N/A	4 3 2 1 0
Presenting and Critiquing	4 3 2 1 0	N/A	4 3 2 1 0

Rating Scale:

4 Met project/task objectives by independently selecting and implementing the most appropriate course of action. Problems were solved in effective and creative ways. Quality and productivity exceed standards.

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1 Completed task as directed, demonstrating rudimentary skills/completeness by following a guided course of action. Quality and productivity meet standard but are inconsistent.

0 Not yet completed task, major deficiencies and/or errors are evident.

N/A Not Applicable

STANDARD IS 2 IN EACH APPLICABLE TASK

TASK CHECKLIST

The student is able to:

Allocating Time and Materials

- ☐ develop and follow a schedule of activities for preparing an agrifoods portfolio
- ☐ use personal initiative to formulate questions and find answers; identify parameters within which problems must be solved
- ☐ access a range of relevant in-school and community resources
- ☐ share information with others for feedback and collaboration
- ☐ interpret, organize and combine information into a logical sequence
- ☐ record information accurately using appropriate technical terms and supporting detail
- ☐ select and use appropriate equipment/materials
- ☐ plan for proper sanitation and advise of potential hazards
- ☐ plan and use time effectively
- ☐ assess and refine approach to task and project status based on feedback and reflection

Profiling the Industry

- ☐ construct flowcharts/diagrams that explain the stages and steps in processing the commodity and developing the value-added product or service
- ☐ construct models/drawings of technological systems used in transportation, storage and processing
- ☐ assess the benefits/costs of technological systems used and potential advantages of alternative technologies
- ☐ assess the impact of transportation and storage requirements on industry location
- ☐ explain quality control techniques, including methods used to inspect raw materials and test product quality and uniformity
- ☐ demonstrate one or more methods of preserving a perishable product; e.g.:
  - blanching and canning
  - dehydration and freeze-drying
  - fermentation
  - refrigeration and freezing
  - atmosphere control (vacuum seal, carbon dioxide seal)
  - use of additives
- ☐ explain systems used to package, grade and label products within the industry
- ☐ identify safety and environmental standards that influence industry operations
- ☐ _____
  _____
- ☐ develop a glossary of terms characteristic of the agrifood industry

Presenting and Critiquing

- ☐ demonstrate effective use of two or more communication media in presenting the portfolio: *e.g., written, oral, audio-visual*
- ☐ communicate ideas in a logical sequence with sufficient supporting detail
- ☐ maintain acceptable grammatical and technical standards
- ☐ provide an introduction that describes the purpose and scope of the portfolio
- ☐ relate final outcomes and products to original purpose, identifying strengths and areas for improvement
- ☐ _____
  _____
- ☐ cite five or more relevant information sources
- ☐ conduct collaborative assessment of processes used and outcomes achieved

TEACHER/STUDENT REFLECTION

TASK	Student		Teacher
Planning and Presentation	4 3 2 1 0	N/A	4 3 2 1 0
Information Gathering and Processing	4 3 2 1 0	N/A	4 3 2 1 0
Content	4 3 2 1 0	N/A	4 3 2 1 0
Collaboration and Teamwork	4 3 2 1 0	N/A	4 3 2 1 0
Information Sharing	4 3 2 1 0	N/A	4 3 2 1 0

Rating Scale:

4 Met project/task objectives by independently selecting and implementing the most appropriate course of action. Problems were solved in effective and creative ways. Quality and productivity exceed standards.

3 Met project/task objectives independently, selecting and using resources/processes efficiently and effectively. No errors or deficiencies are noted. Quality and productivity consistently meet the standard.

2 Met project/task objectives with limited assistance in planning, solving problems and selecting and using resources/processes. Only minor errors/deficiencies are noted. Quality and productivity meet standards, but are occasionally inconsistent.

1 Completed task as directed, demonstrating rudimentary skills/completeness by following a guided course of action. Quality and productivity meet standard but are inconsistent.

0 Not yet completed task, major deficiencies and/or errors are evident.

N/A Not Applicable

STANDARD IS 2 IN EACH APPLICABLE TASK

TASK CHECKLIST

The student is able to:

Preparation and Planning

- ☐ set goals and establish steps to achieve them
- ☐ create and adhere to useful timelines
- ☐ use personal initiative to formulate questions and find answers
- ☐ plan and use time effectively

Information Gathering and Processing

- ☐ access a range of relevant in-school/community resources
- ☐ use a range of information-gathering techniques
- ☐ interpret, organize and combine information into a logical sequence
- ☐ record information accurately with appropriate supporting detail and using correct technical terms
- ☐ determine accuracy/currency/reliability of information sources
- ☐ gather and respond to feedback regarding approach to the task

Content

- ☐ describe one or more career clusters within the agrifoods industry; e.g.:
  - processing
  - business management
  - sales and marketing
  - research and development
  - quality standards and assurance
  - transportation and storage
  - education
  - environmental management

Content (continued)

- ☐ identify and describe occupations relevant to one or more career clusters within the agrifood industry; e.g.:
  - nature of the occupation
  - duties of the worker
  - workplace conditions
  - salary/wages and employee benefits
- ☐ provide a survey of current employment statistics relevant to one or more career clusters; e.g.:
  - types of occupations
  - number of workers
  - employment trends
- ☐ identify entry requirements and training relevant to one or more career clusters; e.g.:
  - entrance requirements and competencies
  - type and extent of training programs
  - post-secondary institutions
- ☐ assess current and future employment opportunities and trends; e.g.:
  - local, national and international needs
  - opportunities for advancement and/or career change
  - opportunities for self-employment and entrepreneurship

Collaboration and Teamwork

- ☐ cooperate with group members
- ☐ share work appropriately among group members
- ☐ negotiate solutions to problems

Information Sharing

- ☐ demonstrate effective use of two or more communication media:
  - *e.g., written, oral, audio-visual*
- ☐ communicate ideas in a logical sequence with sufficient supporting detail
- ☐ maintain acceptable grammatical and technical standards
- ☐ cite five or more relevant information sources.

TEACHER/STUDENT REFLECTION

GUIDE TO CUT FLOWER AND INTERIOR PLANT IDENTIFICATION

CUT FLOWERS AND FOLIAGE

	Botanical and Common Names	Basic Characteristics/ Features	Application and General Use
Dianthus caryophyllus			
Rosa	☐	☐	☐
Chrysanthemum	☐	☐	☐
Narcissus	☐	☐	☐
Tulipa			
Gypsophila paniculata	☐	☐	☐
Odontoglossum	☐	☐	☐
Delphinium ajacis	☐	☐	☐
Limonium sinuatum	☐	☐	☐
German statice	☐	☐	☐
Helichrysum bracteatum monstrosum	☐	☐	☐
Eucalyptus	☐	☐	☐
Archniodes adiantoformis	☐	☐	☐
Asparagus setaceus	☐	☐	☐
Ruscus	☐	☐	☐
Dendrobium orchid	☐	☐	☐
Gladiolus hortulanus	☐	☐	☐
Freesia hybrid	☐	☐	☐
Alstroemeria	☐	☐	☐
Anthurium scherzerianum	☐	☐	☐
Aster	☐	☐	☐
Gerberia	☐	☐	☐
Iris	☐	☐	☐
Protea	☐	☐	☐
Stephanotis floribunda	☐	☐	☐
Achillea Filipendulina	☐	☐	☐
Echinops ritro	☐	☐	☐
_____	☐	☐	☐
_____	☐	☐	☐
_____	☐	☐	☐

INTERIOR PLANTS

	Botanical and Common Names	Basic Characteristics/ Features	Application and General Use
Chrysanthemum	☐	☐	☐
Euphorbia pulcherrima	☐	☐	☐
Lilium	☐	☐	☐
Rhododendron indicum	☐	☐	☐
Saintpaulia	☐	☐	☐
Aglaonema species	☐	☐	☐
Asparagus plumosus	☐	☐	☐
Begonia species	☐	☐	☐
Chlorophytum comosum	☐	☐	☐
Cissus species	☐	☐	☐
Cordyline indivisa	☐	☐	☐
Ficus species	☐	☐	☐
Hibiscus	☐	☐	☐
Kalanchoe blossfeldiana	☐	☐	☐
Cyclamen persicum	☐	☐	☐
_____	☐	☐	☐
_____	☐	☐	☐
_____	☐	☐	☐
_____	☐	☐	☐

STANDARD: The student is able to identify by botanical and common names, basic characteristics/features and application/general use:

- ☐ **15 cut flowers and/or foliage specimens**
- ☐ **5 interior plants**

REFERENCE GUIDES:

- *Flowers Canada Accreditation Manual, Level I*
- *Home Floral Design*

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CONDITIONING FRESH CUT FLOWERS AND GREENERY

The student is able to:

- ☐ unpack incoming stock and inspect for disorders/irregularities
- ☐ prepare containers for incoming stock
- ☐ mix preservatives
- ☐ use correct water temperature to condition materials
- ☐ cut stems under water
- ☐ cut stems to correct length
- ☐ store materials at correct temperature
- ☐ incorporate recutting of stems and replacement of solutions as part of regular work routine
- ☐ handle and clean emergency spills, and maintain facilities in a sanitary condition
- ☐
- ☐
- ☐

HANDLING DRIED AND FABRIC FLOWERS AND GREENERY

The student is able to:

- ☐ bundle materials correctly
- ☐ hang/box materials in a manner that prevents breaking, soiling and fading
- ☐ organize materials in an effective manner
- ☐
- ☐

PACKAGING CUT FLOWERS, INTERIOR PLANTS AND FLORAL ARRANGEMENTS

The student is able to:

- ☐ package materials to protect, stabilize and preserve during transport
- ☐ package materials without causing damage to floral stock
- ☐ package materials to withstand adverse weather conditions
- ☐ include care tags, preservatives, etc., in packaging
- ☐ keep packaging neat and clean in appearance

PACKAGING CUT FLOWERS, INTERIOR PLANTS AND FLORAL ARRANGEMENTS (continued)

- ☐ perform tasks in order of priority
- ☐
- ☐

CONSTRUCTING FLORAL DESIGNS

The student is able to:

- ☐ tie floral bows using ribbons of different width
- ☐ wrap wires of different gauge using floral tape
- ☐ follow and implement a plan for constructing a single bud vase
- ☐ follow and implement a plan for constructing a triple bud vase
- ☐ follow and implement a plan for constructing a single boutonniere
- ☐ follow and implement a plan for constructing a triple corsage
- ☐ follow and implement a plan for constructing a rose bowl

CONSTRUCTING FLORAL DESIGNS (continued)
The student is able to:
☐ follow and implement a plan for constructing a simple mound arrangement
☐ follow and implement a plan for constructing a triangle arrangement of a dozen roses
☐
☐
☐
☐
☐

Rating Scale:

4 Met task objectives by independently selecting and implementing the most appropriate course of action. Problems were solved in effective and creative ways. Quality and productivity exceed standards.

3 Met task objectives independently, selecting and using materials/processes efficiently and effectively. No errors or deficiencies are noted. Quality and productivity consistently meet the standard.

2 Met task objectives with limited assistance in planning, solving problems and selecting and using materials/processes. Only minor errors/deficiencies are noted. Quality and productivity meet standards, but are occasionally inconsistent.

1 Completed task as directed, demonstrating rudimentary skills/completeness by following a guided course of action. Quality and productivity meet standard but are inconsistent.

0 Not yet completed task, major deficiencies and/or errors are evident.

N/A Not Applicable

STANDARD IS 2 IN EACH APPLICABLE TASK AREA

TEACHER/STUDENT REFLECTION

PRODUCT ASSESSMENT: FLORAL ARRANGEMENTS

PROJECT STANDARDS	PROJECT:	PROJECT:	PROJECT:	PROJECT:
Application of Design Principles				
• colour scheme	☐	☐	☐	☐
• composition and arrangement	☐	☐	☐	☐
• balance and symmetry	☐	☐	☐	☐
• proportion and scale	☐	☐	☐	☐
Use of Style				
• symmetrical	☐	☐	☐	☐
• asymmetrical	☐	☐	☐	☐
• mound	☐	☐	☐	☐
• crescent	☐	☐	☐	☐
• hogarth curve	☐	☐	☐	☐
Quality of Workmanship				
• materials used were appropriate and consistent with design concept	☐	☐	☐	☐
• secure in construction and finished on all sides	☐	☐	☐	☐
• construction is concealed	☐	☐	☐	☐
• proper placement and height of floral material	☐	☐	☐	☐
• wrapping is smooth, snug and tight	☐	☐	☐	☐
PROJECT RATING				

Rating Scale:

4 Meets 80-100% of the criteria for a quality floral arrangement
3 Meets 65-79% of the criteria for a quality floral arrangement
2 Meets 50-64% of the criteria for a quality floral arrangement
1 Meets 40-49% of the criteria for a quality floral arrangement
0 Meets less than 40% of the criteria for a quality floral arrangement

N/A Not Applicable

STANDARD IS 2 FOR EACH FLORAL ARRANGEMENT

TEACHER/STUDENT REFLECTION

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TASK	Student		Teacher
Management	4 3 2 1 0	N/A	4 3 2 1 0
Teamwork	4 3 2 1 0	N/A	4 3 2 1 0
Construction Techniques	4 3 2 1 0	N/A	4 3 2 1 0
Safety and Sanitation	4 3 2 1 0	N/A	4 3 2 1 0

Rating Scale:

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1 Completed task as directed, demonstrating rudimentary skills/completeness by following a guided course of action. Quality and productivity meet standard but are inconsistent.

0 Not yet completed task, major deficiencies and/or errors are evident.

N/A Not Applicable

STANDARD IS 2 IN EACH APPLICABLE TASK

TASK CHECKLIST

The student is able to:

Management
- ☐ prepare self for task
- ☐ organize and work in an orderly manner
- ☐ interpret and carry out instructions accurately
- ☐ plan and use time effectively
- ☐ maintain a clean work area
- ☐ adhere to routine procedures
- ☐ _____

Teamwork
- ☐ cooperate with group members
- ☐ share work appropriately among group members
- ☐ negotiate solutions to problems
- ☐ _____

Construction Techniques
- ☐ select and use appropriate tools and floral material
- ☐ interpret and adapt the project plan
- ☐ apply appropriate design principles
- ☐ perform tasks in correct sequence
- ☐ measure accurately
- ☐ minimize waste of materials
- ☐ _____

Safety and Sanitation
- ☐ handle equipment and materials safely
- ☐ maintain facilities in a sanitary condition
- ☐ sanitize tools and containers
- ☐ advise of potential hazards and necessary repairs
- ☐ _____

TEACHER/STUDENT REFLECTION

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TASK	Student		Teacher
Planning and Presentation	4 3 2 1 0	N/A	4 3 2 1 0
Information Gathering and Processing	4 3 2 1 0	N/A	4 3 2 1 0
Content	4 3 2 1 0	N/A	4 3 2 1 0
Collaboration and Teamwork	4 3 2 1 0	N/A	4 3 2 1 0
Information Sharing	4 3 2 1 0	N/A	4 3 2 1 0

Rating Scale:

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1 Completed task as directed, demonstrating rudimentary skills/completeness by following a guided course of action. Quality and productivity meet standard but are inconsistent.

0 Not yet completed task, major deficiencies and/or errors are evident.

N/A Not Applicable

STANDARD IS 2 IN EACH APPLICABLE TASK

TASK CHECKLIST

The student is able to:

Preparation and Planning

- ☐ set goals and establish steps to achieve them
- ☐ create and adhere to useful timelines
- ☐ use personal initiative to formulate questions and find answers
- ☐ plan and use time effectively

Information Gathering and Processing

- ☐ access a range of relevant in-school/community resources
- ☐ use a range of information-gathering techniques
- ☐ interpret, organize and combine information into a logical sequence
- ☐ record information accurately with appropriate supporting detail and using correct technical terms
- ☐ determine accuracy/currency/reliability of information sources
- ☐ gather and respond to feedback regarding approach to the task

Content

- ☐ describe one or more career clusters within the retail floristry industry; e.g.:
  - nursery and greenhouse production
  - floral design and service
  - interior plantscape design and service
  - merchandising and marketing
- ☐ identify and describe occupations relevant to one or more career clusters within the floral industry, e.g.:
  - nature of the occupation
  - duties of the worker

Content (continued)

- workplace conditions
- salary/wages and employee benefits

- ☐ provide a survey of current employment statistics relevant to one or more career clusters; e.g.:
  - types of occupations
  - number of workers
  - employment trends
- ☐ identify entry requirements and training programs relevant to one or more career clusters; e.g.:
  - entrance requirements and competencies
  - type and extent of training programs
  - post-secondary institutions
- ☐ assess current and future employment opportunities and trends; e.g.:
  - local, national and international needs
  - opportunities for advancement and/or career change
  - opportunities for self-employment and entrepreneurship

Collaboration and Teamwork

- ☐ cooperate with group members
- ☐ share work appropriately among group members
- ☐ negotiate solutions to problems

Information Sharing

- ☐ demonstrate effective use of two or more communication media:
  e.g., written, oral, audio-visual
- ☐ communicate ideas in a logical sequence with sufficient supporting detail
- ☐ maintain acceptable grammatical and technical standards
- ☐ cite five or more relevant information sources.

TEACHER/STUDENT REFLECTION

TASK	Student		Teacher
Management	4		4
	3		3
	2	N/	2
	1	A	1
	0		0
Teamwork	4		4
	3		3
	2	N/	2
	1	A	1
	0		0
Use of Equipment and Materials	4		4
	3		3
	2	N/	2
	1	A	1
	0		0
Investigative Techniques	4		4
	3		3
	2	N/	2
	1	A	1
	0		0

Rating Scale:

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0 Not yet completed task, major deficiencies and/or errors are evident.

N/A Not Applicable

STANDARD IS 2 IN EACH APPLICABLE TASK

TASK CHECKLIST

The student is able to:

Management
- ☐ prepare self for task
- ☐ organize and work in an orderly manner
- ☐ interpret and carry out instructions accurately
- ☐ plan and use time effectively
- ☐ adhere to routine procedures

Teamwork
- ☐ cooperate with group members
- ☐ share work appropriately among group members
- ☐ negotiate solutions to problems

Use of Equipment and Materials
- ☐ select and use appropriate equipment/materials
- ☐ model safe procedures/techniques
- ☐ weigh and measure accurately
- ☐ practise proper sanitation procedures
- ☐ minimize waste of materials
- ☐ advise of potential hazards and necessary repairs

Investigative Techniques
- ☐ gather and apply information from a variety of sources
- ☐ describe the general characteristics of each horizon in a soil profile
- ☐ describe the parent materials for soil in each horizon, how it was formed, and how the soil changed over time

Investigative Techniques (continued)
- ☐ describe the influence of the five soil forming factors on soil formation within each horizon; e.g.:
  - climate
  - living organisms
  - parent materials
  - topography
  - time
- ☐ relate the thickness of each horizon to drainage, vegetation and climatic factors
- ☐ identify the fundamental components of soil and explain the relationship of each to soil productivity; i.e.:
  - minerals
  - organic matter
  - air
  - water
- ☐ identify and locate soil zones of Alberta, and the characteristics of soils within each zone; i.e.:
  - grey
  - black
  - dark brown
  - brown
- ☐ observe relationships between vegetation type and soil characteristics on vegetation and soil zone maps of the prairies; i.e.:
  - Grassland
  - Aspen Parkland
  - Forest
  - Mixed Forest and Tundra

TEACHER/STUDENT REFLECTION

TASK	Student		Teacher
Management	4		4
	3		3
	2	N/	2
	1	A	1
	0		0
Teamwork	4		4
	3		3
	2	N/	2
	1	A	1
	0		0
Use of Equipment and Materials	4		4
	3		3
	2	N/	2
	1	A	1
	0		0
Investigative Techniques	4		4
	3		3
	2	N/	2
	1	A	1
	0		0

Rating Scale:

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STANDARD IS 2 IN EACH APPLICABLE TASK

TASK CHECKLIST

The student is able to:

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- ☐ share work appropriately among group members
- ☐ negotiate solutions to problems

Use of Equipment and Materials
- ☐ select and use appropriate equipment/materials
- ☐ model safe procedures/techniques
- ☐ weigh and measure accurately
- ☐ practise proper sanitation procedures
- ☐ minimize waste of materials
- ☐ advise of potential hazards and necessary repairs

Investigative Techniques
- ☐ gather and apply information from a variety of sources
- ☐ identify the three soil separates (i.e., sand, silt, clay) and describe the characteristics of each as they relate to the soil's:
  - suitability for plant growth
  - potential for erosion
  - ease of handling

Investigative Techniques (continued)
- ☐ manually estimate the relative percentages of sand, silt and clay in a soil sample; e.g.:
  - dry consistence test
  - moist cast test
  - ribbon test
- ☐ given the relative percentages of separates in a soil sample, use the soil texture triangle to determine soil texture classification
- ☐ demonstrate relationships between soil texture and:
  - water holding capacity
  - nutrient holding capacity
  - use capability
- ☐ describe types of soil structure and their influence on:
  - soil tilth
  - seed germination and seedling development
  - root growth and penetration
  - water infiltration and soil aeration
  - susceptibility to erosion
  - soil compaction
- ☐ demonstrate procedures for protecting and building favourable soils structure
- ☐ explain effects of parent material and organic matter on soil colour
- ☐ relate soil colour parameters to:
  - textural and structural properties
  - soil productivity
- ☐ use the Munsell colour chart to identify the colour name and notation for a soil sample

TEACHER/STUDENT REFLECTION

TASK	Student		Teacher
Management	4 3 2 1 0	N/A	4 3 2 1 0
Teamwork	4 3 2 1 0	N/A	4 3 2 1 0
Use of Equipment and Materials	4 3 2 1 0	N/A	4 3 2 1 0
Investigative Technique	4 3 2 1 0	N/A	4 3 2 1 0

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STANDARD IS 2 IN EACH APPLICABLE TASK

TASK CHECKLIST

The student is able to:

Management
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- ☐ select and use appropriate equipment/materials
- ☐ model safe procedures/techniques
- ☐ weigh and measure accurately
- ☐ practise proper sanitation procedures
- ☐ minimize waste of materials
- ☐ advise of potential hazards and necessary repairs

Investigative Techniques
- ☐ gather and apply information from a variety of sources
- ☐ explain the acid and alkaline concept, and the importance of soil pH to plant growth
- ☐ draw and label the pH scale
- ☐ state the standard pH ranges for field soils and container media
- ☐ describe the characteristics of carbonated and disturbed soils as they relate to soil pH
- ☐ identify chemical and physical amendments used in modifying soil pH in field and container media
- ☐ measure soil pH using a pH test kit, and make recommendations for media improvement based on measurement results
- ☐ describe the process of cation exchange in soil
- ☐ identify common soil salts and explain their effect on plant growth
- ☐ measure the electrical conductivity of a soil sample (correct to 0.1 unit) and interpret results relative to soil salinity and productivity
- ☐ provide recommendations for the management and reclamation of soil with salinity problems

TEACHER/STUDENT REFLECTION

Sample Social, Economic and Environmental Issues for Investigation:

- Biodiversity of Commercial Plant/Animal Species
- Land Reform in Developing Nations
- Declining Soil Profiles on Arable Land
- Use of Pesticides
- Ground Water Pollution
- Agriculture Subsidies
- Urban Encroachment on Rural Farm Land
- Cost of Protein Production
- Use of Arable Land For Cash Crops or Food Crops
-
-
-
- Genetic Engineering of Food Crops
- Foreign Ownership of Arable Land in the Third World
- Drought, Famine and International Food Aid
- The Greenhouse Effect
- Agricultural Runoff
- International Trade Agreements
- Conscription of Farmers in Times of War
- Water Rights
- Desertification
-
-
-

ISSUE ANALYSIS: SOCIAL, ECONOMIC AND ENVIRONMENTAL PERSPECTIVES

AGR301-2

TASK	Student		Teacher
Preparation and Planning	4 3 2 1 0	N/A	4 3 2 1 0
Analyzing Perspectives	4 3 2 1 0	N/A	4 3 2 1 0
Collaboration and Teamwork	4 3 2 1 0	N/A	4 3 2 1 0
Evaluating Choices and Making Decisions	4 3 2 1 0	N/A	4 3 2 1 0

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0 Not yet completed task, major deficiencies and/or errors are evident.

N/A Not Applicable

STANDARD IS 3 IN EACH APPLICABLE TASK

TASK CHECKLIST

The student is able to:

Preparation and Planning

- ☐ accurately describe an issue in agriculture on which people disagree, explaining specific causes of disagreement
- ☐ pose thoughtful questions regarding the issue
- ☐ access a range of relevant information sources and recognize when additional information is required
- ☐ demonstrate resourcefulness in collecting data

Analyzing Perspectives

- ☐ categorize different points of view regarding the issue: *e.g., cultural, ethical, economic, environmental, health-related, scientific, political*
- ☐ state a position on the issue and insightful reasons for adopting that position
- ☐ state three or more opposing positions on the issue and thoughtful reasons for adopting each position
- ☐ analyze interrelationships among different perspectives/points of view
- ☐ recognize underlying bias/assumptions/values in information and ideas

Collaboration and Teamwork

- ☐ share work appropriately among group members
- ☐ respect and consider the views of others
- ☐ negotiate with sensitivity solutions to agriculture-related problems

Evaluating Choices/Making Decisions

- ☐ describe in detail important and appropriate alternatives regarding the issue
- ☐ establish knowledge- and value-based criteria for assessing each alternative: *e.g., social, economic, environmental*
- ☐ select an appropriate and useful alternative by showing differences among choices
- ☐ assess strengths/weaknesses of decisions by considering consequences and implications for humans and the environment
- ☐ communicate thoughts/feelings/ideas clearly to justify choices/decisions made
- ☐ _____

_____

_____

TEACHER/STUDENT REFLECTION

TASK	Student		Teacher
Planning and Presentation	4 3 2 1 0	N/A	4 3 2 1 0
Information Gathering and Processing	4 3 2 1 0	N/A	4 3 2 1 0
Content	4 3 2 1 0	N/A	4 3 2 1 0
Collaboration and Teamwork	4 3 2 1 0	N/A	4 3 2 1 0
Information Sharing	4 3 2 1 0	N/A	4 3 2 1 0

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STANDARD IS 3 IN EACH APPLICABLE TASK

TASK CHECKLIST

The student is able to:

Preparation and Planning

- ☐ set clear goals and establish steps to achieve them
- ☐ create and adhere to detailed timelines
- ☐ use personal initiative to formulate questions and find answers
- ☐ plan and use time effectively, prioritizing tasks on a consistent basis

Information Gathering and Processing

- ☐ access a range of relevant information sources and recognize when additional information is required
- ☐ demonstrate resourcefulness in collecting data
- ☐ interpret, organize and combine information in creative and thoughtful ways
- ☐ record information accurately with appropriate supporting detail and using correct technical terms
- ☐ recognize underlying bias/assumptions/values in information sources
- ☐ assess and refine approach to the task and project status based on feedback and reflection

Content

- ☐ provide a clear statement of a social, economic or environmental issue in agriculture relevant within the Alberta and/or Canada context
- ☐ compare the Alberta/Canada issue with a similar issue at the global level
- ☐ cite statements made by scientists, key stakeholder groups and the media regarding the issue
- ☐ suggest different approaches for dealing with the issue at local, national and global levels

Content (continued)

- ☐ provide an analysis of costs and benefits associated with different approaches for dealing with the issue
- ☐ _____
- ☐ _____

Collaboration and Teamwork

- ☐ cooperate with group members
- ☐ share work appropriately among group members
- ☐ negotiate with sensitivity solutions to problems
- ☐ display effective communication and leadership skills

Information Sharing

- ☐ demonstrate effective use of a variety of communication media:
  e.g., written, oral, audio-visual
- ☐ communicate thoughts/feelings/ideas clearly to justify or challenge a position
- ☐ maintain acceptable grammatical and technical standards
- ☐ give evidence of adequate information gathering by citing seven or more relevant information sources.

TEACHER/STUDENT REFLECTION

TASK	Student		Teacher
Preparation and Planning	4 3 2 1 0	N/A	4 3 2 1 0
Analyzing Perspectives	4 3 2 1 0	N/A	4 3 2 1 0
Collaboration and Teamwork	4 3 2 1 0	N/A	4 3 2 1 0
Negotiating and Debating	4 3 2 1 0	N/A	4 3 2 1 0

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TASK CHECKLIST

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Preparation and Planning

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- ☐ pose thoughtful questions regarding the issue
- ☐ access a range of relevant information sources and recognize when additional information is required
- ☐ demonstrate resourcefulness in collecting data

Analyzing Perspectives

- ☐ state a position on the issue and insightful reasons for adopting that position
- ☐ explain why the issue is important by presenting examples of possible consequences and implications for humans and the environment
- ☐ categorize different points of view regarding the issue: *e.g. cultural, ethical, economic, environmental, health-related, scientific, political*
- ☐ recognize underlying bias/assumptions/values in information and ideas

Collaboration and Teamwork

- ☐ work with a wide range of peer members
- ☐ share information/opinions/suggestions, maintaining a balance between speaking and listening
- ☐ listen to and respect the views of others, requesting clarification as necessary from other group members

Negotiating and Debating

- ☐ present a convincing argument in logical sequence supporting a position adopted, conveying points in order of importance and backing each with sound evidence
- ☐ provide a relevant and convincing rebuttal to opposing arguments
- ☐ speak clearly without hesitation so the argument can be understood by all listeners
- ☐ negotiate a shared agreement on preferred alternatives by resolving divergent points of view
- ☐ _____

_____

_____

TEACHER/STUDENT REFLECTION

TASK	Student		Teacher
Planning and Presentation	4		4
	3		3
	2	N/	2
	1	A	1
	0		0
Content	4		4
	3		3
	2	N/	2
	1	A	1
	0		0
Presenting/ Reporting	4		4
	3		3
	2	N/	2
	1	A	1
	0		0

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STANDARD IS 3 IN EACH APPLICABLE TASK

TASK CHECKLIST

The student is able to:

Preparation and Planning

- ☐ set goals and describe steps to achieve them
- ☐ use personal initiative to formulate questions and find answers
- ☐ access a range of relevant information sources and recognize when additional information is required
- ☐ interpret, organize and combine information in creative and thoughtful ways
- ☐ record information accurately using appropriate technical terms and supporting detail
- ☐ plan and use time effectively, prioritizing tasks on a consistent basis
- ☐ assess and refine approach to task and project status based on feedback and reflection

Content

- ☐ provide a clear and concise statement of the issue
- ☐ examine social, political, scientific, ethical, economic and/or environmental perspectives related to the issue
- ☐ provide detailed examples of the consequences of previous human activities relevant to the issue
- ☐ establish a logical argument and conclusion regarding the issue, and provide a rationale for the position taken
- ☐ develop a plan of action for dealing with the issue at local and global levels
- ☐ provide a glossary of terms relevant to the issue

Content (continued)

- ☐ _____
- _____
- _____
- ☐ _____
- _____
- _____

Presenting/Reporting

- ☐ demonstrate effective use of a variety of communication media:
  - *e.g., Written: spelling, punctuation, grammar, format (formal/informal, technical/ literary)*
  - *Oral: voice projection, body language, appearance, enthusiasm, evidence of prior practice*
  - *Audio-Visual: techniques, tools, clarity, speed and pacing*
- ☐ maintain acceptable grammatical and technical standards through proof-reading and editing
- ☐ provide an introduction that describes the purpose and scope of the project
- ☐ communicate thoughts/feelings/ideas clearly to justify or challenge a position
- ☐ state a conclusion by analyzing and synthesizing the information gathered
- ☐ give evidence of adequate research through a reference list including seven or more relevant information sources

TEACHER/STUDENT REFLECTION

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LINKAGES/TRANSITIONS

WITH OTHER CTS STRANDS

The Agriculture strand provides opportunities for students to develop competencies in one or more industry sectors, including:

- plant and/or animal production
- agrifoods
- agribusiness
- landscape and turf management
- animal husbandry and health care
- floristry
- marketing
- environmental management.

Each industry sector (and area of course emphasis) links with competencies that are developed in other CTS strands. To facilitate and strengthen these linkages, CTS courses may be designed by combining agriculture modules with modules from other CTS strands, (e.g., Construction Technologies, Design Studies, Fabrication Studies, Foods, Forestry, Mechanics, Wildlife). Specific linkages between Agriculture and other CTS strands will be determined by course emphasis and area of industry specialization.

The Career Transitions strand of CTS provides project, research, practicum, safety and leadership modules that may be combined with modules in Agriculture to increase opportunity for students to develop expertise and refine their competencies. For example, a plant production or landscape venture may require more than the 25, 50 or 75 hours available through modules by that name. In these cases, project, research and/or practicum modules from the Career Transitions strand can be accessed so as to provide sufficient time for completion of learning and the task.

Sample courses in Agriculture that involve linkages with other CTS strands are provided in charts in this section.

LINKAGES—JUNIOR HIGH SCHOOL AGRICULTURE

Course Emphasis	Agriculture Modules	Foods Modules	Mechanics Modules	Wildlife Modules
Environmental Management (75 hours)	Agriculture: Getting the Big Picture Resource Management and Conservation			Our Wildlife—Our Responsibility
Landscape Maintenance (100 hours)	Agriculture: Getting the Big Picture Applications of Agriculture Technology Consumer Products and Services		Engine Fundamentals	
Agrifoods (125 hours)	Agriculture: Getting the Big Picture Applications of Agriculture Technology Consumer Products and Services	Food Basics Canadian Foods: Our Heritage		
Field Crop Production (150 hours)	Agriculture: Getting the Big Picture Applications of Agriculture Technology Production Basics Marketing Fundamentals		Engine Fundamentals Mechanical Systems	

LINKAGES—SENIOR HIGH SCHOOL AGRICULTURE

Course Emphasis	Agriculture Modules	Enterprise & Innovation Modules	Design Studies Modules	Career Transitions Modules
Introductory Horticulture (5 credits) Prerequisite: None	Production Basics Field Nursery & Greenhouse Crops I Consumer Products and Services	Challenge and Opportunity		Project 1A 2
Intermediate Horticulture (5 credits) Prerequisite: Introductory Horticulture	Field Nursery & Greenhouse Crops II Landscape and Turf Management I Soils Management I 1	Planning a Venture		Project 2A 2
Advanced Horticulture (5 credits) Prerequisite: Intermediate Horticulture	Controlled Growing Environments Landscape and Turf Management II Soils Management II 1	Making It Happen		Project 3A 2
Beginning Floristry and Plantscape (3 credits) Prerequisite: None	Floristry I		Design Techniques —Fundamentals	Project 2A 3
Advanced Floristry and Plantscape (3 credits) Prerequisite: Beginning Floristry and Plantscape	Floristry II		3-D Design—Studio	Project 3A 3

1. Contains specific learner expectations consistent with Soils Management (Soils 100–35) at Olds College.
2. Articulation with Landscape Gardener Apprenticeship Training Program.
3. Articulation with Floristry Accreditation Program.

WITH OTHER SECONDARY PROGRAMS

The Agriculture strand has many links with the junior and senior high science programs, and provides opportunities for students to extend and apply scientific knowledge and skills in practical ways.

Modules in the Agriculture strand overlap existing content in the Junior High Agriculture: Land and Life, and Horticulture 12, 22 and 32 programs. A detailed correlation of the Agriculture strand to existing practical arts courses can be found in charts in this section.

TO THE WORKPLACE

Intermediate and advanced modules are designed to develop knowledge, skills and attitudes that provide transitions to occupations in Alberta's agriculture industries. Some career sectors welcome individuals who have basic skills and are prepared to learn through further training from the employer.

Information from the National Occupational Classification (NOC) and provincial Occupational Profiles (POP) regarding occupations in agriculture-related areas that can be accessed upon completion of high school is provided in this section.

TO RELATED POST-SECONDARY PROGRAMS

Advanced level modules will assist students to make plans regarding further studies in agriculture at post-secondary levels. The Agriculture modules provide desirable background and skills for entry into related programs at public and private colleges, technical institutes, universities and vocational collages in Alberta. In addition, opportunities exist for further training and experience through the Landscape Gardener Apprenticeship Training Program.

An outline of post-secondary institutions in Alberta currently offering programs in agriculture-related areas is provided in chart form in this section of this Guide.

CREDENTIALLING

Students may earn credentials recognized in the workplace and/or post-secondary institutions by demonstrating specified competencies within the CTS curriculum. The Agriculture strand provides opportunities for students to develop competencies consistent with:

- the Alberta Green Certificate Farm Training Program
- the Landscape Gardener Apprenticeship Training Program
- Flowers Canada Accreditation Program
- Pesticide Applicator/Dispenser Certificate Courses.

In addition, formal agreements have been established with Olds College for the recognition of competencies developed in some Agriculture modules.

Further information regarding credentials, requirements and contacts is provided in chart form in this section of this Guide.

AGRICULTURE

Course Comparison For Agriculture: Land and Life 7, 8 and 9

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence
Survey: What is Agriculture?																															
diversity of agriculture	x																														
steps in production, processing and marketing		x																													
agriculture careers	x		x	x	x																										
agriculture as both producer and consumer	x																														
historical trends	x																														
local, national and international food production	x				x																										
transportation and trade of food products		x		x	x																										
factors that support and inhibit food production	x	x	x																												
global issues in food production							x																								
YEAR ONE																															

AGRICULTURE

Course Comparison For Agriculture: Land and Life 7, 8 and 9

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence
Theme 1: Production, Processing and Marketing - Emphasis on Consumer																															
consumption; consumer needs and preferences	x																														
classifying products	x																														
steps in processing and packaging		x		x																											
approaches to marketing					x																										
farm production		x	x																												
transportation and storage		x		x	x																										
career specializations	x		x	x	x																										
local, provincial and national production	x				x																										
Theme 2: Technology and Research - Mechanics																															
tasks performed in agriculture production		x	x			x																									

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Course Comparison For Agriculture: Land and Life 7, 8 and 9

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence
manual and mechanical approaches to production			X			X																									
power sources						X																									
technology as a means of problem solving						X																									
efficiency of technologies			X	X		X																									
safe use of technologies			X	X		X																									
effectiveness of technologies			X	X		X																									
drawing, designing and constructing technologies						X																									
Theme 3: Resource Management - Water																															
water requirements		X	X				X																								
water resources							X																								
landforms and water supply							X																								

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Course Comparison For Agriculture: Land and Life 7, 8 and 9

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence
strategies for water management							x																								
water rights							x																								
water issues							x																								
trade-offs in water uses							x																								
conservation ethic	x						x																								
careers in water management	x		x	x	x																										
YEAR TWO																															
Theme 1: Production, Processing and Marketing - Emphasis on Nutrition																															
nutrient composition of foods											x												x								
consumer needs and preferences	x																														
identifying and classifying products	x																														

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Course Comparison For Agriculture: Land and Life 7, 8 and 9

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence
processing and packaging		X		X																											
farm production operations		X	X																												
breed development						X																									
transportation and storage		X		X	X																										
local, national and international production	X				X																										
Theme 2: Technology and Research - Planning, Monitoring and Managing																															
natural, artificial and micro environments																X															
plant growth and plant health			X																												
soil moisture and humidity			X																												
plant propagation			X																												
pest and disease management			X																												

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Course Comparison For Agriculture: Land and Life 7, 8 and 9

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence
controlled growing environments																x															
optimum conditions for plant growth			x																												
Theme 3: Resource Management - Soil																															
soil functions and characteristics			x				x																								
soil types			x				x																								
soil development							x																								
nutrient cycles																	x														
soil degradation							x																								
soil management							x																								
organic and inorganic nutrients							x																								
global issues in soil management							x																								

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Course Comparison For Agriculture: Land and Life 7, 8 and 9

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence
careers in soil management	X		X	X	X																										
YEAR THREE																															
Theme 1: Production, Processing and Marketing - Emphasis on Energy																															
range of food crops	X																														
consumption; consumer needs and preferences	X																														
identifying and classifying products	X																														
processing, packaging and merchandising		X		X	X																										
farm production operations		X	X																												
transportation and storage		X		X	X																										
inherent and invested energy						X																									
food pyramid	X																														

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Course Comparison For Agriculture: Land and Life 7, 8 and 9

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence
local, national and international production	X				X																										
Theme 2: Technology and Research - Biotechnology																															
breeds and varieties			X			X																									
genetic characteristics			X			X																									
principles of animal breeding			X			X																									
artificial insemination and embryo transplants			X			X																									
growth supplements and food additives			X			X																									
hormones			X			X																									
biotechnology			X			X																									
Theme 3: Resource Management - Land Use																															
classifying land uses							X																								

AGRICULTURE

Course Comparison For Agriculture: Land and Life 7, 8 and 9

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence
identifying land use issues	X						X																								
evaluating alternative land uses							X																								
historical changes in land use							X																								
sustained yeild and stewardship							X																								
interpreting/drawing land use plans																														X	
setting goals in land use	X						X																								
careers in land use planning	X		X	X	X																										

AGRICULTURE

Course Comparison For Horticulture 12, 22 and 32

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence	Career Transitions
HORTICULTURE 12																																
landscaping												x												x								
indoor plants														x												x						
soils and fertilizers												x		x			x							x		x				x		
food production									x							x				x	x											
botony and biology									x			x						x			x			x								
greenhouses									x							x					x											
pruning												x												x								
floral design														x												x						x
HORTICULTURE 22A																																
food and ornamental plants									x			x									x			x								
greenhouses									x							x					x											

AGRICULTURE

Course Comparison For Horticulture 12, 22 and 32

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence	Career Transitions
greenhouse systems																X																
safety									X			X				X		X			X			X		X						
soils in greenhouse									X							X	X				X									X		
practical project									X			X		X		X					X			X		X						X
HORTICULTURE 22B																																
ground maintenance												X					X	X						X					X	X		X
scheduling and planning ground care activities																								X								X
site preparation												X												X								X
planting trees, shurbs, lawns, annuals and perennials												X												X								X
general maintenance of landscaped areas												X					X	X						X					X	X		X
use of equipment and tools												X												X								X

AGRICULTURE

Course Comparison For Horticulture 12, 22 and 32

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence	Career Transitions
landscape construction and maintenance												x					x	x						x					x	x		x
HORTICULTURE 22C																																
history of park and garden development																																x
reasons for landscaping																																x
commercial and residential design																																x
preparation of a landscape plan																																x
cost estimating																																X
using annual and perennial flowers												x												x								
use of indoor plants														x												x						
design work using flowers and plants														x												x						
HORTICULTURE 32A																																

AGRICULTURE

Course Comparison For Horticulture 12, 22 and 32

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence	Career Transitions
nursery site selection									X												X											
identification of woody ornamentals									X			X									X			X								
propagation of woody ornamentals and greenhouse crops									X			X									X			X								
nursery development									X												X											
marketing procedures															X												X					
scheduling of crops									X												X											
greenhouse cost accounting																																X
practical project									X			X		X		X					X			X		X						X
HORTICULTURE 32B																																
biological aspects of horticulture									X			X						X			X			X								
horticulture crops									X		X										X		X									

AGRICULTURE

Course Comparison For Horticulture 12, 22 and 32

	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequence	Career Transitions
ecological aspects of organic gardening									x										x		x										x	
ecological aspects of parks and other landscapes												x							x					x					x		x	
HORTICULTURE 32C																																
landscape construction																																x
pesticide application									x			x						x			x			x								
business managment																								x		x						x
work study									x			x		x							x			x		x						x

AGRICULTURE

Summary of Post-Secondary Programs *

CODES:

B	Bachelor's Degree	V	Varies
M	Master's Degree	1t	One-year transfer
PhD	Doctoral Degree	2t	Two-year transfer
C	Certificate (1 year or less)	w	weeks
D	Diploma (2 years)	m	months
		y	years

	PUBLIC COLLEGES										PRIVATE COLLEGES				TECH. INST.		UNIVERSITIES			VOCATIONAL COLLEGES			
	Fairview College	Grande Prairie Regional College	Grant MacEwan Community College	Lakeland College	Lethbridge Community College	Medicine Hat College	Mount Royal College	Olds College	Red Deer College	APPRENTICESHIP TRADE	Augustana University College	Canadian Union College	Concordia College	King's College, The	Northern Alberta Institute of Technology	Southern Alberta Institute of Technology	University of Alberta	University of Calgary	University of Lethbridge	AVC - Calgary	AVC - Edmonton	AVC - Lac La Biche	AVC - Lesser Slave Lake
Agricultural Business/Management	D			D	VD			D									B		CMB				
Agricultural Production/Technology	CD			D	D			D															
Agriculture (degree program with various specializations)				1t		1t	1t		1t		1t	1t	1t				BM PhD		1t				
Animal Health Technology	D			D				D							D	D							
Beekeeper Technician (Apiarist)	C																						
Equine Studies/Western and English Trainer's Assistant	C			D				D															
Farrier Science	C							C															
Horticulture/Landscape Design/ Gardening								D		4y					D					C			
Turfgrass Management Technology	D							D															
Pre-Veterinary Medicine		2t	1t	1t		2t	1t		2t		2t	1t	2t	2t			2t	3t	2t				

* Acknowledgement: It's About Time To start thinking about your future, 1993-1994. (available for the LRDC, Edmonton, Alberta)

Potential opportunities for transition into the Workplace/Post-Secondary Programs

Occupation Profile	NOC/POP	A	B	C	D
Agricultural and Fish Products Inspector	NOC	√		√	√
Agricultural and Related Service Contractor and Manager	NOC	√		√	√
Agricultural Commodity Inspector	POP	√		√	√
Agricultural Engineer	POP				√
Agricultural Engineering Technologist	POP			√	√
Agricultural Mechanic/Farm Equipment Mechanic	POP		√		
Agricultural Products Processing Occupations	POP	√			
Agricultural Representative, Consultant and Specialist	NOC				√
Animal Care Attendant	POP			√	√
Animal Health Technologist	BOTH			√	
Artifical Insemination Technician	POP			√	
Aquaculture and Marine Harvet Labourer	NOC	√			
Aquaculture Operator and Manager	NOC	√		√	
Biochemist	POP	√		√	√
Biological Technician	BOTH			√	√
Biologist and Related Scientists	NOC				√
Botanist	POP				√
Chemist	NOC				√
Dairy Producer	POP			√	
District Agriculturalist	POP			√	√
Environmental Auditor	POP			√	√
Environmental Education Specialist	POP				√
Environmental Engineer	POP				√
Farm Supervisors and Specialized Livestock Workers	NOC	√		√	
Farm Workers	BOTH	√			
Farmers and Farm Managers	NOC	√		√	
Farrier	POP			√	
Feed Mill Worker (Production)	POP	√			
Florist (Floral Designer)	POP			√	
Grain and Forage Crop Producer	POP	√		√	
Grain Elevator Manager	POP	√		√	
Grain Elevator Operator	NOC	√			
Greenhouse/Nursery Operator	BOTH	√		√	
Harvesting Labourer	NOC	√			
Hazardous Waste Management Technician	POP			√	
Hydrologist	POP				√
Inspector in Public and Environmental Health and Occupational Health and Safety	NOC	√		√	√√
Land Surveyor	NOC				√
Landscape and Horticultural Technician and Specialist	NOC			√	√

Occupation Profile	NOC/POP	A	B	C	D
Landscape Architect	BOTH				√
Landscape Gardener	POP		√		
Landscape Architectural Technologist	POP			√	
Landscaping and Grounds Maintenance Contractor and Manager	NOC			√	
Landscaping and Grounds Maintenance Labourer	NOC	√			
Livestock Producer	POP	√	√	√	√
Manufacturing Manager	NOC			√	√
Market Gardener	POP	√		√	
Other Labourer in Processing, Manufacturing and Utilities	NOC	√			
Other Professional Engineer	NOC				√
Other Professional Ocupations in Physical Sciences	NOC				√
Pet Groomer and Animal Care Worker	NOC		√		
Pest Control Operator/Exteminator	BOTH		√		
Pollution Control Technician	POP				√
Primary Production Manager	NOC				√
Supervisor, Food, Beverages	NOC	√			
Supervisor, Landscape and Horticulture	POP	√			
Tester and Grader, Food and Beverage Processing	NOC	√			
Turfgrass Management Specialist	POP			√	
Veterinarian	BOTH				√

The numbers in the above chart represent the total number of both the National Occupational Classification (NOC) and the provincial Occupational Profiles (POP) that require:

A: High School Education
B: Apprenticeship
C: College or Vocational Education
D: University

CREDENTIALLING OPPORTUNITIES IN AGRICULTURE-RELATED AREAS

Credentialling Program	CTS LINKAGES		Credentialling Agency
	Strand	Module	
Farmer Pesticide Certificate Program	Career Transitions	Practicum Modules	Extension Services, Olds College Telephone: 556-8344
Flowers Canada Accreditation Program • Design Skills • Retail Skills	Agriculture	Floristry I Floristry II	Flowers Canada, The Association of the Canadian Floral Industry Telephone: (519) 823-2670 or Flowers Canada, Alberta Region Telephone: 672-2553
Green Certificate Farm Training Program • Beef Production • Dairy Production • Crop Production • Irrigated Crop Production • Sheep Production • Swine Production	Agriculture	Field, Nursery and Greenhouse Crops I Field, Nursery and Greenhouse Crops II Livestock, Poultry and Animal Specialties I Livestock, Poultry and Animal Specialties II	Alberta Agriculture, Food & Rural Development Telephone: 427-2173
Landscape Gardener Apprenticeship Program	Agriculture	Landscape and Turf Management I Landscape and Turf Management II	Alberta Career Development and Employment Telephone: 427-8517
Lawn and Garden Domestic Pesticide Dispenser Course	Career Transitions	Practicum Modules	Extension Services, Olds College Telephone: 556-8344
Pesticide Applicator Certificate • Agriculture • Landscape • Industrial	Career Transitions	Practicum Modules	Continuing Education, Lakeland College Telephone: 853-8444
Retail Pesticide Dispenser Certificate (Class I)	Career Transitions	Practicum Modules	Continuing Education, Lakeland College Telephone: 853-8444
Soil 100-35 (advanced standing in introductory soils at Olds College)	Agriculture	Soils Management I Soils Management II	Registrar's Office, Olds College Telephone: 556-8281 (or) 1-800-661-OLDS

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CAREER & TECHNOLOGY STUDIES

AGRICULTURE

LEARNING RESOURCE GUIDE

INTERIM 1994
(SEPTEMBER 1994 - SEPTEMBER 1997)

Alberta
EDUCATION
CURRICULUM STANDARDS BRANCH

MAY 1995

Comments and suggestions are welcome and should be directed to:

Career and Technology Studies Unit
Alberta Education
Curriculum Standards Branch
11160 Jasper Avenue
Edmonton, AB
T5K 0L2
Telephone: 422-4872
Fax: 422-5129

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INTRODUCTION

CTS AND THE RESOURCE-BASED CLASSROOM

Career and Technology Studies (CTS) encourages teachers to establish a resource-based classroom, where a variety of appropriate, up-to-date print and non-print resources are available. Learning resources identified for CTS strands include print, software, interactive videos, manipulatives, student learning guides and tutorials.

The resource-based classroom approach accommodates a variety of instructional strategies and teaching styles, and supports individual or small group planning. It provides students with opportunities to interact with a wide range of information sources in a variety of learning situations. Students in CTS are encouraged to take an active role in managing their own learning. Ready access to a strong resource base enables students to learn to screen and use information appropriately, to solve problems, to meet specific classroom and learning needs, and to develop competency in reading, writing, speaking, listening and viewing.

PURPOSE AND ORGANIZATION OF THIS DOCUMENT

The purpose of this document is to help teachers identify a variety of resources to meet their needs and those of the students taking the new Agriculture curriculum. It is hoped that this practical guide to resources will help teachers develop a useful, accessible resource centre that will encourage students to become independent, creative thinkers.

This document is organized as follows:

- Authorized Resources:
  - basic learning resources
  - support learning resources
  - teaching resources
- Other Resources
- Additional Sources.

Some resources in the guide have been authorized for use in some or all of the CTS strands, e.g., the 11-video Career and Technology Studies series produced by ACCESS Network. Full information is provided in the appropriate section of this resource guide.

Each resource in the guide provides bibliographic information, an annotation where appropriate, and a correlation to the Agriculture modules. The distributor code for each entry will facilitate ordering resources. It is recommended that teachers preview all resources before purchasing, or purchase one copy for their reference and additional copies as required.

Distributor Code	Resources		Levels/Mod. No.		
			1	2	3
ATEC	Author	Title	101	201	301
	Bibliographic Information				
	Annotation				

1 = Introductory
2 = Intermediate
3 = Advanced

Indicates module number

Distributor Code - see Distributor Directory

HOW TO ORDER

Most authorized resources are available from the Learning Resources Distributing Centre (LRDC) at:

12360 - 142 Street
Edmonton, AB
T5L 4X9
Telephone: 427-2767
Fax: 422-9750

Purchase order numbers have been provided (where possible) for resources available through the LRDC. The section on Additional Sources lists a variety of other places to find information related to this strand. In addition, at the back of this document is a Distributor Directory, which contains the name and address of each publisher/distributor referred to in the resource list. Note that in some cases a resource may be published by one company but distributed through another.

The information contained is as complete and accurate as possible.

RESOURCE POLICY

For further information on resource policy and definitions, refer to the *Student Learning Resources Policy* and *Teaching Resources Policy* or contact:

Learning Resources Unit
Curriculum Standards Branch
Alberta Education
5th Floor, Devonian Building, East Tower
11160 Jasper Avenue
Edmonton, AB
T5K 0L2
Telephone: 422-4872
Fax: 422-5129

AUTHORIZED RESOURCES

BASIC LEARNING RESOURCES

The following basic learning resources have been authorized by Alberta Education for use in the Agriculture curriculum. These resources address the majority of the learner expectations in one or more modules and/or levels. A curriculum correlation appears in the right-hand column.

Distributor Code	Resources	Levels/Module No.		
		1	2	3
LRDC	*Agriculture: Land and Life.* Year 1, Student Pack, Grade 7, 8 or 9. Edmonton, AB: Alberta Distance Learning Centre, 1990. LRDC PO#207862-04. Includes four student modules and answer booklets dealing with "Milk and Milk Products", "People, Machines and Grain", "Water and Agriculture" and "What is Agriculture?" (a summary). The materials are designed to develop an awareness of the diversity of agricultural activity in the student's local area, in Alberta, and in the national and international community. Various topics are introduced through the examination of current agricultural practices and in many cases through hands-on activities. Topics are relevant to students in both rural and urban areas. These resources are useful to inexperienced Agriculture teachers or experienced Agriculture teachers wishing to try a different approach. A Learning Facilitator's Manual to accompany the student modules is also available. Elements of this package can also be ordered individually. Milk & Milk Products. LRDC PO#207789-04. People, Machines & Brain. LRDC PO#207797-04. Water & Agriculture. LRDC PO#207804-04. Summary: What is Agriculture? LRDC PO#207812-04. Assignment Booklet Package (includes 4 booklets). LRDC PO#208068-04.	101 102 103 106 109 110 111		

Basic Learning Resources (Cont'd.)

Distributor Code	Resources	Levels/Module No. 1	2	3
LRDC	*Agriculture: Land and Life.* Year 2, Student Pack, Grade 7, 8 or 9. Edmonton, AB: Alberta Distance Learning Centre, 1992. LRDC PO#207911-04. Includes four student modules and answer booklets dealing with "Managing Soil Resources", "Greenhouse Technology", "Meat and Meat Products" and "What is Agriculture?" (a summary). The materials are designed to develop an awareness of the diversity of agricultural activity in the student's local area, in Alberta, and in the national and international community. Various topics are introduced through the examination of current agricultural practices and in many cases through hands-on activities. Topics are relevant to students in both rural and urban areas. These resources are useful to inexperienced agriculture teachers or experienced agriculture teachers wishing to try a different approach. A Learning Facilitator's Manual to accompany the student modules is also available. Elements of this package can also be ordered individually. Managing Soil Resources. LRDC PO#207820-04. Greenhouse Technology. LRDC PO#207838-04. Meat and Meat Products. LRDC PO#207846-04. Summary: What is Agriculture? LRDC PO#207854-04. Assignment Booklet Package (includes 4 booklets). LRDC PO#208216-04.	101 102 103 106 109 110 111		
LRDC	*Agriscience and Technology.* L. DeVere Burton. Albany, NY: Delmar Publishers Inc., 1992. Student textbook. LRDC PO#276510-01. This student textbook addresses the evolution of agriculture. It includes basic science, research and technological development used in agriculture. The text discusses technological advances from past to present, and research that may affect agriculture in the future. The textbook is divided into five sections, including Biotechnology, Technology: Food and Fiber, Energy and Power Technology, Computer Aided Management and Environmental Technology.	101 102 103 106 109 110 111		
LRDC	*Global Environment, The.* Steven Sterling and Sue Lyle. Mississauga, ON: Copp Clark Pitman, 1991. Textbook. LRDC PO#275538-37. This text addresses a broad range of environmental issues within a global context. Issues are examined through a variety of stimulating activities, including case studies, discussion and role-playing.	111	212	301 311 312 313

Basic Learning Resources (Cont'd.)

Distributor Code	Resources	Levels/Module No. 1	2	3
LRDC	*Home Floral Design.* Lansing, MI: The John Henry Company, 1991. Student textbook. LRDC PO#276312-01. This student textbook addresses basic techniques used in the florist industry. Colorful illustrations, photographs and well-illustrated step-by-step instructions make the textbook easy to use by students and teachers. Soft cover format.		208	308
LRDC	*Landscaping Principles and Practices.* Jack E. Ingels. Albany, NY: Delmar Publishers Inc., 1992. Student textbook. LRDC PO#276502-01. This student textbook provides an introductory overview of the landscaping industry. It includes basic principles of landscape design, methods of installation and maintenance, and strategies for beginning a landscaping business.		206	306
LRDC	*Soils Investigations I.* Ed Toews, Bill Souster, Doug Peters. Olds, AB: Land Sciences Centre, Olds College, 1993. Student textbook. The student text addresses the history of soil development, soil forming factors, components of soil, classification, texture, structure, colour, pH and salinity. Each unit includes brief statements about the purpose for studying the unit, what the student should be able to do at the end of the unit, suggested activities, definition of technical terms, self-checks and answer keys.		212	
LRDC	*Soils Investigations II.* Ed Toews, Bill Souster, Doug Peters. Olds, AB: Land Sciences Centre, Olds College, 1993. Student textbook. This student textbook addresses the nutrient requirement of plants, soil fertility, fertilizers, soil testing, the western grid survey system, soil capability and soil survey maps and reports. Each unit includes the purpose for studying the unit, what students should be able to do at the completion of a unit, suggested activities, definition of technical terms, self-checks and answer keys.			312
LRDC	*Which Future? Investigating World Environmental Issues.* Don Harris and Chris Dolan. Mississauga, ON: Copp Clark Pitman, 1992. Textbook. LRDC PO#275520-37. This text deals with a variety of environmental issues and cites examples from many parts of the world. Topics covered include food and population, land degradation, forest clearing, pollution and alternative energy sources.		212	301 311 312 313

SUPPORT LEARNING RESOURCES

The following support learning resources are authorized by Alberta Education to assist in addressing some of the learner expectations of a module or components of modules.

Distributor Code	Resources	Levels/Module No.		
		1	2	3
AGP	*Backyard Pest Management.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, 1994. Booklet. This 83-page booklet provides basic information about the management of insects, weeds, plant diseases and vertebrate pests commonly found in the homeowner's backyard. The information is intended to help individuals select non-chemical and chemical approaches to solving pest problems. The booklet provides answers to over 150 common pest problems, discusses alterntives to pesticides and develops strategies for the safe use of pesticides.		203 206 213	303 306
ACC	*Career and Technology Studies: Key Concepts.* Edmonton, AB: ACCESS Network. Series of videos and utilization guides relevant to all CTS strands. Series consists of *Anatomy of a Plan, Creativity, Electronic Communication, The Ethics Jungle, Go Figure, Innovation, Making Ethical Decisions, Portfolios, Project Planning, Responsibility* and *Technical Writing.*	all	all	all
LRDC	*Chemicals on the Farm.* Bob McDuell. Cheltenham, England: Stanley Thornes (Publishers) Ltd, 1990. Booklet. LRDC PO#275786-01. This resource addresses a variety of topics regarding the effects of chemicals on agriculture, including food chains, soil acidity, the nitrogen cycle, the manufacture of nitric acid, reactions of nitric acids, making fertilizers and water pollution. This booklet has limited print and makes extensive use of graphics.		203	301 303 313
LRDC	*Commercial Greenhouse, The.* James W. Boodley. Albany, NY: Delmar Publishers Inc., 1981. Textbook. LRDC PO#276544-01. This textbook focuses attention on the technical aspects of greenhouse facilities, the economics of the horticulture industry, growing media, environmental factors, greenhouse crops and the harvest handling and marketing of plants and flowers. The text includes information on occupations in floriculture. This is an American publication and does not provide references to Canada.		203 210	303
ACC	*If You Build It.* Winnipeg, MB: Ducks Unlimited Canada, 1991. Videotape (21 minutes). This videotape discusses the importance of wetlands in maintaining the health of ecosystems. An overview of human factors involved in wetland restoration is provided.	111		301 311 313

Support Learning Resources (Cont'd.)

Distributor Code	Resources	Levels/Module No. 1	2	3
ACC	*Life Cycle of Waterfowl.* Winnipeg, MB: Ducks Unlimited Canada, 1991. Videotape (24 minutes). This videotape discusses the importance of waterfowl as a natural resource, and the habitat features that make Alberta a primary area for waterfowl production. Provides a basic understanding of the life history and ecology of waterfowl. Patterns of duck migration routes are discussed.	111		301 311 313
LRDC	*Living Soil, The: A Renewable Resource.* Sue Bland and Marilyn Lewry. Edmonton, AB: Weigl Education Publishers Limited, 1991. Book. LRDC PO#102848-10. Provides an introduction to soil — where it comes from, what happens in soil, and why it is important. Part I explores what soil is and how it is formed. Part II examines what happens in soil. Part III looks at the role of soil in the environment and the effects of human activities on soil. Includes case studies, activities, occupational profiles and a glossary.	111	212	312
LRDC	*One Minute Readings: Issues in Science, Technology and Society.* R.F. Brinckerhoff. Don Mills, ON: Addison-Wesley Publishing Company, 1992. Textbook (LRDC PO#105628-13). This book contains readings and questions related to issues in science, technology and society. Applications of science are raising difficult questions and are creating some problems that cannot be answered. The book is intended to give students practice in making the kinds of decisions they will experience in life. Students need a knowledge of science to find the best possible answers.			301 302 313
LRDC	*Organic Field Crop Handbook.* Dee Kramer, et al. Ottawa, ON: Canadian Organic Growers Inc., 1992. Handbook. The book provides an introduction to organic farming. The handbook is divided into three sections: Basic Principles of Organic Agriculture; Designing Crop Rotation; Step-by-step Guide to Field Crops. The purpose of the book is to provide information regarding sustainable agriculture practices.		203 209	303 309 313
LRDC	*Raising Poultry Successfully.* Will Graves. Charlotte, VT: Williamson Publishing Co., 1985. Book. LRDC PO#275827-01. The author provides practical advice on how to raise chickens, ducks and geese for meat and eggs. The book also addresses techniques for housing and care techniques for animals.		204	304

Support Learning Resources (Cont'd.)

Distributor Code	Resources	Levels/Module No. 1	2	3
LRDC	*Soil Science & Management.* (2nd edition.) Edward J. Plaster. Albany, NY: Delmar Publishers Inc., 1992. Student textbook (LRDC PO#276552-01). This resource addresses the importance of soil, soil origin and development, physical properties of soil, soil water, water conservation, irrigation and drainage, organic matter, soil fertility, soil pH and salinity, plant nutrition, soil sampling and testing, fertilizers, organic amendments, tillage and cropping systems, horticulture uses of soils, soil classification and soil conservation. This is an American publication and does not provide references to Canada.		203 212	303 312 313
LRDC	*University of Alberta Home Gardening Course.* John Harapiak. Edmonton, AB: University of Alberta, Faculty of Extension, 1986. Textbook. This textbook provides an in-depth study of home gardening. The content, tables, graphs and maps apply to Alberta. It covers sub-topics under the headings of Garden Fundamentals, Landscaping, Vegetable and Fruit Production and Controlled Environments. Appropriate to the needs of high school students.		203 206 213	303 306
LRDC	*Water and Agriculture.* Edmonton, AB: Alberta Environment, 1988. Resource kit. LRDC PO#102814-04. This kit includes a Student Book, Teacher's Guide, Activity Master Sheets, Overhead Projector Masters and Masters for Posters. The resource establishes an understanding of how water affects and is affected by agricultural practices. The unit examines technological practices developed to manage water in times and places where inadequate or excessive supplies occur. Of particular relevance to junior high students.	111		301 311
FEESA	*Wetland Environments.* Lloyd Pearce. Edmonton, AB: Ducks Unlimited Canada, 1991. Kit. This educational kit addresses the following topics: wetlands ecology, wetlands habitats, wetland and waterfowl, wetland conservation and wetland environmental issues. The central focus is on problem-oriented investigation involving research, experimental procedure and field experiences. The kit includes student materials, teacher notes and video resources.	111		301 311 313

TEACHING RESOURCES

The following teaching resources are authorized by Alberta Education to assist teachers in the instructional process.

Distributor Code	Resources	Levels/Module No.		
		1	2	3
LRDC	*Ecology Studies of Lakes in Alberta.* Edmonton, AB: Alberta Environment, 1988. Resource materials include book (LRDC PO#112491-04) and Teacher's Package (LRDC PO#112483-04). This print package deals with the ecology of freshwater environments. The unit of study discusses human impact on lake environments and involves students in the methods and technology employed to study lakes. Workshops on how to use the materials are provided.	111	213	301 311 313
GGE	*From the Ground Up.* Garry Ens., et al. Winnipeg, MB: Green and Growing Educational Projects, 1994. Videotape and Teacher's Guide. This 30-minute video focuses on issues of sustainable development in agriculture and food production. The video explores relationships between agricultural practices and the health of our society, environment and economy. The program encourages debate over food production and marketing practices, giving viewers an opportunity to consider their influence as consumers and citizens on the way food is produced. The video is supported with a Teacher's Guide giving lesson plans and student worksheets.		205 209	301 305 309 313
LRDC	*Issues: An Integrated Approach to Sensitive Science and Society Issues.* A. Hersovici. Mississauga, ON: Ontario Farm Animal Council (OFAC), 1992. Resource book. LRDC PO#276239-01. This resource deals with some of the ethical, environmental, health and socioeconomic issues concerning agriculture today. The resource suggests teaching strategies that encourage critical thinking, research and collaborative decision making. A number of case studies are included along with a contact list for further research.		202	301 302 313
LRDC	*One Minute Readings: Issues in Science, Technology and Society.* R.F. Brinckerhoff. Don Mills, ON: Addison-Wesley Publishing Company, 1992. Teacher's Manual (LRDC PO#105636-13). This book contains readings and questions related to issues in science, technology and society. Applications of science are raising difficult questions and are creating some problems that cannot be answered. The book is intended to give students practice in making the kinds of decisions they will experience in life. Students need a knowledge of science to find the best possible answers.			301 302 313

Teaching Resources (Cont'd.)

Distributor Code	Resources	Levels/Module No.		
		1	2	3
SSC	*Primer on Environmental Citizenship, A.* Ottawa, ON: Environment Canada, 1993. Resource book. The goal of this document is to help Canadians to make environmentally responsible decisions. The book provides short informational anecdotes, maps and charts, and questions/ answers concerning people becoming environmentally conscious citizens. The book includes information on ecological processes, relationships of human societies with the environment, and key environmental issues that Canadians face today. The book is one of a series of Environmental Citizenship Primers.	111	213	301 302 311 313
SSC	*Primer on Water, A.* Ottawa, ON: Environment Canada, 1990. Resource book. This primer was developed to answer a wide range of questions about water. The resource covers a range of topics, e.g., water (general), underground water, water uses, water quality, water sharing, water management, water do's and don'ts. The primer contains practical advice on what individuals can do to conserve water for the use of present and future generations.	111		301 311 313
LRDC	*Soil Science & Management.* (2nd edition.) Edward J. Plaster. Albany, NY: Delmar Publishers Inc., 1992. Instructor's Guide (LRDC PO#276255-01). This resource addresses the importance of soil, soil origin and development, physical properties of soil, soil water, water conservation, irrigation and drainage, organic matter, soil fertility, soil pH and salinity, plant nutrition, soil sampling and testing, fertilizers, organic amendments, tillage and cropping systems, horticulture uses of soils, soil classification and soil conservation. This is an American publication and does not provide references to Canada.		203 212	303 312 313
LRDC	*Soils Investigations 1 and 2: Facilitator's Manual.* Ed Toews, Bill Souster and Doug Peters. Olds, AB: Land Sciences Centre, Olds Collete, 1994. This manual is intended to be used with *Soils Investigations 1 and 2* basic student resources. Includes approximately 25 pages of teaching notes and assignment answer keys, and 50 pages of sample test items. The manual also provides information about required laboratory equipment and provides a supplementary list of print and video resources.		212	312

Teaching Resources (Cont'd.)

Distributor Code	Resources	Levels/Module No.		
		1	2	3
LRDC	*Soils Investigations 1 and 2: Materials Kit.* Olds, AB: Land Sciences Centre, Olds College, 1994. The materials kit contains consumable and non-consumable items not usually found in a science lab that are required to conduct laboratory activities suggested in *Soils Investigation 1 and 2* (modules and assignment booklets). The kit includes a videotape of different soil formations and profiles, soil and fertilizer samples, soil survey maps and reports, and a Munsell Colour Chart. A materials replenishment kit for consumable items is available.		212	312
LRDC	*Space Age Agriculture: Land and Life.* Edmonton, AB: Alberta Agriculture, 1987. Handbook. LRDC PO#102806-04. This teacher handbook includes lesson plans, notes on teaching strategies and general information about the agriculture industry. The primary goal of all activities is to promote awareness of agriculture in Alberta, and of current production, processing and distribution systems.	101 102 103 106 109 110 111		

AGRICULTURE RESOURCES

THEME CODE:
A. Social & Cultural Perspectives
B. Technology & Applications
C. Management & Conservation

FORMAT CODE:
p - Print
v - Video
s - Software

STATUS CODE:
B - Basic
S - Support
T - Teaching
O - Other

LEVEL CODE:
1 - Introductory
2 - Intermediate
3 - Advanced

JUNIOR/SENIOR HIGH
J - Junior High
S - Senior HIgh

LEVEL				1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
THEME				A	A	B	B	B	B	C	A	B	B	B	B	B	B	B	B	C	C	A	A	B	B	B	B	B	B	B	B	B	C	C	C
	Format	Status	Junior/Senior High	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequences
PRINT RESOURCES																																			
Agriculture: Land and Life, Level 1 (Distance Education)	*p*	*B*	J	X	X	X	X	X	X	X																									
Agriculture: Land and Life, Level 2 (Distance Education)	*p*	*B*	J	X	X	X	X	X	X	X																									
Agriscience and Technology	*p*	*B*	J	X	X	X	X	X	X	X																									
The Global Environment	*p*	*B*	J							X										X		X										X	X	X
Home Floral Design	*p*	*B*	S														X												X						
Landscaping Principles and Practices	*p*	*B*	S												X												X								
Soils Investigations I	*p*	*B*	S																	X															
Soils Investigations II	*p*	*B*	S																															X	
Which Future? Investigating World Environmental Issues	*p*	*B*	S																	X		X										X	X	X
Chemicals on the Farm	*p*	*S*	S									X										X		X										X
The Commercial Greenhouse	*p*	*S*	S									X							X					X										

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				Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequences
LEVEL				1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
THEME				A	A	B	B	B	B	C	A	B	B	B	B	B	B	B	B	C	C	A	A	B	B	B	B	B	B	B	B	C	C	C	C
The Living Soil: A Renewable Resource	*p*	*S*	J/S							X										X														X	
One Minute Readings: Issues in Science, Technology and Society	*p*	*S*	S																			X	X												X
Organic Field Crop Handbook	*p*	*S*	S									X						X						X						X					X
Raising Poultry Successfully	*p*	*S*	S										X												X										
Soil Science and Management	*p*	*S*	S									X								X				X										X	X
University of Alberta Home Gardening Course	*p*	*S*	S									X			X						X			X			X								
Water and Agriculture	*p*	*S*	J/S							X												X										X			
Wetland Environments	*p*	*S*	J/S							X												X										X			X
If You Build It	*v*	*S*	J/S							X												X										X			X
Life Cycle of Waterfowl	*v*	*S*	J/S							X												X										X			X
Backyard Pest Management in Alberta: Diseases , Insects, Weeds	*p*	*S*	S									X			X						X			X			X								
Ecology Studies of Lakes in Alberta	*p*	*T*	J/S							X											X	X										X			X
From the Ground Up	*p/v*	*T*	S											X				X				X				X				X					X

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THEME				A	A	B	B	B	B	C	A	B	B	B	B	B	B	B	B	C	C	A	A	B	B	B	B	B	B	B	B	C	C	C
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Issues: An Integrated Approach to Sensitive Science and Society Issues	*p*	*T*	S								X											X	X											X
A Primer on Environmental Citizenship	*p*	*T*	J/S							X											X	X	X									X		X
A Primer on Water	*p*	*T*	J/S							X												X										X		X
Soils Investigations 1 & 2 Materials Kit	*k*	*T*	S																	X													X	
Soils Investigations: Facilitator's Manual	*p*	*T*	S																	X													X	
Space Age Agriculture: Land and Life	*p*	*T*	J	X	X	X	X	X	X	X																								
Agriculture in Alberta	*p*	*O*	J/S	X																														
Agriscience Fundamentals and Applications	*p*	*O*	S								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Agroclimatic Atlas of Alberta	*p*	*O*	S									X			X									X			X							
Alberta Forage Manual	*p*	*O*	S									X	X											X	X									
Alberta Horticultural Guide	*p*	*O*	S									X			X									X			X							
The Amazing Milk Book	*p*	*O*	J		X		X																											
The Bedding Plant Expert	*p*	*O*	S									X												X										

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			LEVEL	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3
			THEME	A	A	B	B	B	B	C	A	B	B	B	B	B	B	B	B	C	C	A	A	B	B	B	B	B	B	B	B	C	C	C
	Format	Status	Junior/Senior High	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequences
Beef Herd Management Reference Binder and Study Guide	*p*	*O*	S									X												X										
Canada's Canola	*p*	*O*	S									X												X										
Career Connections	*p*	*O*	J/S	X		X	X	X				X	X	X	X	X	X	X																
Caring For the Land Teaching Kit	*p*	*O*	J			X				X																								
Environment and Agribusiness: A Career Consideration	*p*	*O*	J/S	X		X	X	X				X	X	X	X	X	X	X																
Farm Energy Management in Alberta	*p*	*O*	S									X	X											X	X									
Farming Facts 1993: Statistical Insights on Canadian Agriculture	*p*	*O*	J/S	X																		X												
Farm Machinery	*p*	*O*	S									X												X										
Field and Shelter Belts	*p*	*O*	S									X												X										X
The Florist Review	*p*	*O*	S														X												X					
Focus On Series	*p*	*O*	J/S							X											X	X	X									X		X

AGRICULTURE RESOURCES

THEME CODE:
A. Social & Cultural Perspectives
B. Technology & Applications
C. Management & Conservation

FORMAT CODE:
p - Print
v - Video
s - Software

STATUS CODE:
B - Basic
S - Support
T - Teaching
O - Other

LEVEL CODE:
1 - Introductory
2 - Intermediate
3 - Advanced

JUNIOR/SENIOR HIGH
J - Junior High
S - Senior High

LEVEL				1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
THEME				A	A	B	B	B	B	C	A	B	B	B	B	B	B	B	B	C	C	A	A	B	B	B	B	B	B	B	B	C	C	C	C
	Format	Status	Junior/Senior High	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequences
Food For Thought - Facts About Food and Farming in Canada	*p*	*O*	S																			X	X												X
Grain and Oilseed Marketing Manual	*p*	*O*	S															X												X				
Green Future: How To Make A World of Difference	*p*	*O*	S																			X	X											X
The Household Hazardous Wastes Handbook	*p*	*O*	J/S							X											X	X												X
The Houseplant Expert	*p*	*O*	S														X												X					
How Green Is Your School?	*p*	*O*	S																			X												X
Join the Agricultural Professionals	*p*	*O*	J/S	X		X	X	X				X	X	X	X	X	X	X																
Land Conservation Education Program	*p*	*O*	J/S			X				X		X	X		X					X		X	X										X	X
Land Use and Abuse	*p*	*O*	J/S							X		X								X		X		X									X	X
Looking At Food Systems	*p*	*O*	J		X	X	X	X																										
Modern Livestock and Poultry Production	*p*	*O*	S										X												X									
Ornamental Horticulture: Principles and Applications	*p*	*O*	S									X			X		X				X			X			X		X					

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THEME				A	A	B	B	B	B	C	A	B	B	B	B	B	B	B	B	C	C	A	A	B	B	B	B	B	B	B	B	B	C	C	C	C
	Format	Status	Junior/Senior High	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequences
Pesticide Education Program	*p*	*O*	S			X			X			X			X						X	X		X			X								X
Potash: Its Need and Use in Modern Agriculture	*p*	*O*	S									X												X											
Prairie Soils: The Case for Conservation	*p*	*O*	S									X								X				X										X	X
A Primer on Fresh Water	*p*	*O*	J/S							X												X										X			X
A Primer on Waste Management	*p*	*O*	S																			X													X
Recommended Code of Practice for the Care & Handling of Farm Animals	*p*	*O*	S								X		X										X		X										
The Role of Fertilizers in Sustainable Agriculture and Food Production	*p*	*O*	S									X												X											X
The Story of Soil and Water Conservation in Alberta	*p*	*O*	J/S							X										X												X	X		
Water In Alberta: The Living Flow	*p*	*O*	S																			X										X			X

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THEME				A	A	B	B	B	B	C	A	B	B	B	B	B	B	B	B	C	C	A	A	B	B	B	B	B	B	B	B	C	C	C
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Water Quality Questions: The Nature and Importance of Water Quality Variables in Alberta	*p*	*O*	J/S			X				X												X	X									X		X
Water Management in Alberta	*p*	*O*	S																													X		X
Weed Seedling Identification	*p*	*O*	S									X			X									X			X							
VIDEO RESOURCES																																		
Alberta: A Good Place For Agriculture	*v*	*O*	J	X	X																													
Animal Welfare - It's Your Responsibility	*v*	*O*	S								X		X			X									X			X						
Bovine Madness	*v*	*O*	J	X	X																													
Careers in Agriculture	*v*	*O*	J			X	X	X																										
Cattle Option	*v*	*O*	S										X					X							X					X				
Farm Conservation Planning	*v*	*O*	S									X	X											X	X									
Farmer Buck: W5 Series	*v*	*O*	S															X												X				
Gone With the Wind ... Too?	*v*	*O*	S									X								X		X		X									X	X
The Green Cow	*v*	*O*	S										X									X			X									

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THEME				A	A	B	B	B	B	C	A	B	B	B	B	B	B	B	B	C	C	A	A	B	B	B	B	B	B	B	B	C	C	C	C	C
	Format	Status	Junior/Senior High	Agriculture: Getting the Big Picture	From Producer To Consumer	Production Basics	Consumer Products & Services	Marketing Fundamentals	Applications of Agriculture Technology	Resource Management & Conservation	Animal Husbandry and Health Care	Field Nursery & Greenhouse Crops I	Livestock, Poultry & Animal Specialties I	Agrifoods I	Landscape & Turf Management I	Pets and Equine I	Floristry I	Marketing I	Controlled Growing Environments	Soils Management I	Integrated Pest Management	Global Issues in Agriculture	Ethics in Agriculture & Food Production	Field, Nursery & Greenhouse Crops II	Livestock, Poultry & Animal Specialties II	Agrifoods II	Landscape and Turf Management II	Pets & Equine II	Floristry II	Marketing II	Applications of Biotechnology	Water Management	Soils Management II	Environmental Conservation & Consequences
Guess What's Coming to Dinner	*v*	*O*	S																												X					
In Balance With Nature	*v*	*O*	S																			X														X
The Magic of Water	*v*	*O*	J/S							X		X												X								X			
A Matter of Soil	*v*	*O*	S									X								X				X										X	
Oh Gully - Where is the Soil?	*v*	*O*	S									X								X		X		X										X	X
On the Line	*v*	*O*	J/S				X							X												X									
Pest Wars	*v*	*O*	S									X							X					X											
The Reason Why	*v*	*O*	J/S	X	X																	X													
Salt Woes	*v*	*O*	S									X								X				X										X	
A Sense of Humus	*v*	*O*	S									X										X	X	X											X
Space Age Agriculture	*v*	*O*	J						X																										
The Sun Changers	*v*	*O*	S										X												X										
The Urge to Till	*v*	*O*	S									X								X		X		X								X	X	X	
Water Water: Making the Most of Moisture	*v*	*O*	S									X	X											X	X							X			

OTHER RESOURCES

These titles are provided as a service only to assist local jurisdictions to identify resources that contain potentially useful ideas for teachers. Alberta Education has done a preliminary review of the resources. However, the responsibility to evaluate these resources prior to selection rests with the user, in accordance with any existing local policy.

Distributor Code	Other Resources
AGP	*Agriculture in Alberta*. Edmonton, AB: Alberta Agriculture, Print Media Branch, 1993. Booklet.
LRDC	*Agriscience Fundamentals and Applications*. Elmer L. Cooper. Albany, NY: Delmar Publishers Inc., 1990. Textbook. This textbook suits the needs of rural and urban students and teachers in Agriculture. Topics covered include environmental technology, plant sciences, integrated pest management, interior and exterior plantscape, animal sciences, food sciences and agribusiness. Each chapter features potential careers in agriculture. Many of the student learning activities focus attention on hands-on experiences that involve collaboration and personal management skills.
AGP	*Agroclimatic Atlas of Alberta*. Edmonton, AB: Alberta Agriculture, Print Media Branch, 1990. Booklet.
ACC	*Alberta: A Good Place For Agriculture*. Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1989. Videotape.
AGP	*Alberta Forage Manual*. Edmonton, AB: Alberta Agriculture, Print Media Branch, 1992. Manual.
AGP	*Alberta Horticultural Guide*. Edmonton, AB: Alberta Agriculture, Food and Rural Development, 1994. Booklet.
DNC	*Amazing Milk Book, The*. Catherine Ross and Susan Wallace. Toronto, ONo: Kids Can Press Ltd., 1991. Textbook.
AGME	*Animal Welfare - It's Your Responsibility*. Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1990. Videotape.
PBI	*Bedding Plant Expert, The*. D.G. Hessayon. Britannica House, Waltham Cross, Herts, England: PBI Publications, 1992. Textbook.
AGME	*Bovine Madness*. Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1992. Videotape.
CCC	*Canada's Canola*. W.J. Miller. Winnipeg, MB: Canola Council of Canada. Booklet.
AGE	*Career Connections*. Edmonton, AB: Alberta Agriculture, Food and Rural Development, Education and Community Services Branch. Poster.

Other Resources (Cont'd.)

Distributor Code	Other Resources
ACC	*Careers in Agriculture.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1985. Videotape.
ENED	*Caring For the Land Teaching Kit* (Grades 7-9). Edmonton, AB: Alberta Environmental Protection, Education Branch, 1993. Teacher's guide and student material.
ACC	*Cattle Option.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1986. Videotape.
SSC	*Environment and Agribusiness: A Career Consideration.* Ottawa, ON: Minister of State For Youth, 1991. Pamphlet series.
AGME	*Farm Conservation Planning.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1991. Videotape.
AGP	*Farm Energy Management in Alberta.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Engineering and Rural Services Division. Booklet.
OUP	*Farm Machinery.* (12th edition.) Claude Culpin. Don Mills, ON: Oxford University Press, 1992. Textbook.
CTV	*Farmer Buck: W5 Series,* Toronto, ON: CTV Television Network Ltd., 1992. Videotape.
SSC	*Farming Facts 1993: Statistical Insights on Canadian Agriculture.* Ottawa, ON: Statistics Canada, 1993. Booklet.
AGP	*Field Shelter Belts for Soil Conservation.* Edmonton, AB: Alberta Agriculture, Print Media Branch, 1992. Booklet.
FREI	*Florist Review, The.* Frances Porterfield. Topeka, KS: Florists' Review Enterprises Incorporated, 1988. Periodical.
ENED	*Focus On Series (Acidic Deposition, Air Quality, Environment, Greenhouse Effect, Land Reclamation, Ozone Depletion, Pesticides, Pollution, Recycling, Water Conservation).* Edmonton, AB: Alberta Environmental Protection, Education Branch. Booklets.
OFAC	*Food For Thought: Facts About Food and Farming in Canada.* Alan Herscovici. Mississauga, ON: Ontario Farm Animal Council. Brochure.
ACC	*Gone With the Wind ... Too?* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1984. Videotape.

Other Resources (Cont'd.)

Distributor Code	Other Resources
AGP	*Grain and Oilseed Marketing Manual.* (2nd edition.) Edmonton, AB: Alberta Agriculture, Market Analysis Branch, 1983. Booklet.
AGME	*Green Cow, The.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1993. Videotape.
PBC	*Green Future: How To Make A World of Difference.* Lorraine Johnson. Markham, ON: Penguin Books, 1990. Textbook.
BBC	*Guess What's Coming to Dinner.* Toronto, ON: BBC Education and Training Sales, 1990. Videotape.
ECA	*Household Hazardous Wastes Handbook, The.* Edmonton, AB: Alberta Special Waste Management Corporation, 1991. Booklet.
PBI	*Houseplant Expert, The.* D.G. Hessayon. Britannica House, Waltham Cross, Herts, England: PBI Publications. Textbook.
OCV	*How Green Is Your School?* Don E. McAllister. Ottawa, ON: Ocean Voice, 1991. Booklet.
AGME	*In Balance With Nature.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1991. Videotape.
AGIC	*Join the Agricultural Professionals.* Ottawa, ON: Agricultural Institute of Canada, 1976. Series of pamphlets and information sheets.
ENED	*Land Conservation Education Program. (Readings Grades 10-12.)* Edmonton, AB: Alberta Environmental Protection, Education Branch. Booklet.
NEL	*Land Use and Abuse.* Terri Willis. Chicago, IL: Childrens Press, 1992. Textbook.
OAF	*Looking At Food Systems* (The Transition Years, Grades 7 - 9). Milton, ON: Ontario Agri-Food Education Inc, 1993. Teacher resource booklet.
ACC	*Magic of Water, The.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch and Century II Motion Pictures, 1975. Videotape.
AGME	*Matter of Soil, A.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1985. Videotape.

Other Resources (Cont'd.)

Distributor Code	Other Resources
NEL	*Modern Livestock and Poultry Production.* (4th edition.) James R. Gillespie. Albany, NY: Delmar Publishers Inc., 1992. Textbook.
ACC	*Oh Gully - Where is the Soil?* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch and Tustian Film Productions, 1983. Videotape.
GCF	*On the Line.* Glenwood, AB: Glenwood Cheese Factory and Food Processors' Institute, 1985. Videotape.
NEL	*Ornamental Horticulture: Principles and Applications.* Jack Ingels. Albany, NY: Delmar Publishers Inc., 1985. Student textbook.
ACC	*Pest Wars.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1984. Videotape.
ENED	*Pesticide Education Program.* Edmonton, AB: Alberta Environmental Protection, Education Branch. Teacher resource booklet, resource sheets and student materials.
PPIC	*Potash: Its Need and Use in Modern Agriculture.* Saskatoon, SK: The Potash & Phosphate Institute of Canada, 1989. Booklet.
SSC	*Prairie Soils: The Case for Conservation.* Regina, SK: Prairie Farm Rehabilitation Administration, 1989. Booklet.
SSC	*Primer on Fresh Water, A.* Ottawa, ON: Minister of the Environment, Minister of Supply and Services Canada, 1993. Teacher guide book.
SSC	*Primer on Waste Management, A.* Ottawa, ON: Environment Canada, 1993. Booklet.
ACC	*Reason Why, The.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch and Century II Motion Pictures, 1983. Videotape.
SSC	*Recommended Code of Practice for the Care & Handling of Farm Animals.* Ottawa, ON: Agriculture Canada, 1991. Booklet series.
CFI	*Role of Fertilizers in Sustainable Agriculture and Food Production, The.* Ottawa, ON: Canadian Fertilizer Institute, 1990. Booklet.
AGME	*Salt Woes.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1986. Videotape.

Other Resources (Cont'd.)

Distributor Code	Other Resources
ACC	*Sense of Humus, A.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch and National Film Board, 1976. Videotape.
AGME	*Space Age Agriculture.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1990. Videotape.
AGP	*Story of Soil and Water Conservation in Alberta, The.* Alberta Agriculture, 1989. Booklet.
ACC	*Sun Changers, The.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch and Elanco Division, Eli Lilly, 1978. Videotape.
AGME	*Urge to Till, The.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch and Image Works, 1990. Videotape.
ENED	*Water In Alberta: The Living Flow.* Edmonton, AB: Alberta Environmental Protection, Education Branch, 1993. Teacher resource kit.
EPPC	*Water Management in Alberta.* Edmonton, AB: Alberta Environment, 1991. Booklet.
LRDC	*Water Quality Questions: The Nature and Importance of Water Quality Variables in Alberta.* Edmonton, AB: Alberta Environmental Protection, Education Branch, 1990. Teacher guide and student booklet.
ACC	*Water Water: Making the Most of Moisture.* Edmonton, AB: Alberta Agriculture, Food and Rural Development, Broadcast Media Branch, 1988. Videotape.
AGP	*Weed Seedling Identification.* Edmonton, AB: Alberta Agriculture, Print Media Branch, 1990. Booklet.

ADDITIONAL RESOURCES

Available to Agriculture teachers, both locally and provincially, are many resources that can be used to enhance Career and Technology Studies. These sources are available through the community, government agencies, resource centres and organizations. Some of these sources, e.g., governement departments, udergo frequent name and/or telephone number changes. Please consult your telephone- directory or an appropriate government directory.

The following is a partial list of sources to consider:

TEACHER-LIBRARIANS

Planned and purposeful use of library resources helps students grow in their ability to gather, process and share information. Research activities require access to an adequate quantity and variety of appropriate, up-to-date print and non-print resources from the school library, other libraries, the community and additional sources. Some techniques to consider are:

- planning together
- establishing specific objectives
- integrating research skills into planning.

Cooperation between the teacher-librarian and the subject area teacher in the development of effectively planned resource-based research activities ensures that students are taught the research skills as well as the subject content.

Also see *Focus on Research: A Guide to Developing Student's Research Skills* referenced in the Alberta Education Resources section.

ALBERTA EDUCATION SOURCES

The following monographs are available for purchase from:

Learning Resource Distributing Centre
12360 - 142 Street
Edmonton, AB
T5L 4X9
Telephone: 427-2767
Fax: 422-9750

Please consult the "Support Documents" section or the "Legal, Service and Information Publications" section in the *Buyers Guide* for ordering information and costs.

Developmental Framework Documents

- *The Emerging Student: Relationships Among the Cognitive, Social and Physical Domains of Development*, 1991

  This document looks at the whole child, or student, as a productive learner, integrating all the domains of development: cognitive, social and physical. It emphasizes the need for providing balanced curriculum and instruction.

- *Students' Interactions Developmental Framework: The Social Sphere*, 1988

  This document focuses on the student as a social being. It looks at the student's affective or emotional growth and examines moral development. These three domains make up the social sphere.

- *Students' Physical Growth: Developmental Framework Physical Dimension*, 1988

  This document examines children's normal physical growth in three areas: perceptual, structural and motor development. In none of these areas is the child's growth in a single continuous curve throughout the first two decades of life. Physical growth is characterized by periods of rapid growth and periods of slower growth. Consequently, differences and changes in growth patterns may affect the timing of certain learning processes.

- *Students' Thinking: Developmental Framework Cognitive Domain*, 1987

  This document explores children's cognitive development from infancy to adolescence. The Piagetian stages of pre-operational, concrete operational and formal operational thinking are explained. Suggestions for improving the learning process are also presented.

Others

- *Focus on Research: A Guide to Developing Students' Research Skills*, 1990

  This document outlines a resource-based research model that helps students manage information efficiently and effectively, and in this process, to gain skills that are transferable to all school and work situations. This model provides a developmental approach to teaching students how to do research.

- *Teaching Thinking: Enhancing Learning*, 1990

  Principles and guidelines for cultivating thinking, ECS to Grade 12, have been developed in this resource. It offers a definition of thinking, describes nine basic principles on which the suggested practices are based, and discusses possible procedures for implementation in schools and classrooms.

OTHER GOVERNMENT SOURCES

ACCESS Network
ACCESS Network offers a variety of resource and services to teachers. For a nominal dubbing and tape fee, teachers may have ACCESS Network audio and video library tapes copied.

ACCESS Network publishes a listing of audio and video cassettes as well as a comprehensive programming schedule.

Of particular interest are the Career and Technology Studies videos, which are available with teacher utilization guides. The guides outline key points in each video and suggest questions for discussion, classroom projects and other activities. Video topics are listed in the Support Learning Resources section of this Guide. The videos and accompanying support material can be obtained from:

ACCESS Network
3720 - 76 Avenue
Edmonton, AB
T5B 2N6
Telephone: 440-7777 (in Edmonton)
1-800-352-8293
(outside Edmonton)

Agriculture and Agri-Food Canada
Food Production and Inspection Branch
11713 - 82 Street
Edmonton, AB
T5B 2V9
Telephone: 495-5577
Fax: 495-3359

Or

474, 220 - 4 Avenue SE
Calgary, AB
T2G 4X3
Telephone: 292-4327
Fax: 292-6132

Or

102, 3650 - 36 Street NW
Calgary, AB
T2L 2L1
Telephone: 289-7736
Fax: 221-3296

Labelling Division
11713 - 82 Street
Edmonton, AB
T5B 2V9
Telephone: 495-7287
Fax: 495-6451

Or

102, 3650 - 36 Street NW
Calgary, AB
T2L 2L1
Telephone: 289-7736
Fax: 221-3296

Agriculture Canada
Communications Branch
Ottawa, ON
K1A 0C7
Telephone: (819) 994-0246

General and Technical Publications (a comprehensive listing of free and inexpensive print materials on a variety of topics in agriculture; updated each year).

Agricultural Education and Community Services Branch
2nd Floor, 7000 - 113 Street
Edmonton, AB
T6H 5T6
Telephone: 427-2171
Fax: 438-3362

Agriculture Ambassador Program
Agriculture in the Classroom Program
Agriculture Summer Institute
Farm Safety Program
Green Certificate Farm Training Program
Home Study Program.

Alberta Advanced Education and Career Development
Information Development and Marketing
9th Floor, City Centre Building
10155 - 102 Street
Edmonton, AB
T5J 4L5
Telephone: 422-1794
Fax: 422-5126

Career Information Catalogue Update, 1994
The Career Planner
Children Challenges Choice
Entrepreneur: A Big Word for Small Business
Rural Women as Business Entrepreneurs
Positive Works
Skills are your Passport.

Videos on career planning and entrepreneurial topics are available through the library of this department. Call 422-4752 for more information. The following videos are representative of the library's holdings:
The Entrepreneur
Get a Job
A Head for Business
The Seven Phases of a Job Interview.

Alberta Agriculture, Food and Rural Development
Print Media Branch
7000 - 113 Street
Edmonton, AB
T6H 5T6
Telephone: 427-2121
Fax: 427-2861

Publications List (a comprehensive listing of free and inexpensive print materials on a variety of topics in agriculture; updated each year).

Broadcast Media Branch
7000 - 113 Street
Edmonton, AB
T6H 5T6
Telephone: 427-2127
Fax: 427-2861

Audio Visual Catalogue (an annotated listing of films and videos available for loan upon request; updated each year).

Alberta Economic Development and Tourism
Strategic Planning and Research
9th Floor, Sterling Place
9940 - 106 Street
Edmonton, AB
T5K 2N2
Telephone: 422-9494
Fax: 422-5922

Financing a Small Business
Marketing a Small Business
Starting a Small Business.

Alberta Environmental Protection
Education Branch
12th Floor, 9820 - 106 Street
Edmonton, AB
T5K 2J6
Telephone: 427-6310
Fax: 427-2512
Land Conservation Education Program
Pesticide Education Program
The Water Literacy Program
Focus On Series
Poster Education Series
(Workshops and presentations on these program materials can be arranged.)

Alberta Health
Environmental Health Services
10030 - 107 Street
Edmonton, AB
T5J 3E4
Telephone: 427-2643

Alberta Health will issue a Certificate of Achievement in Food Sanitation and Hygiene to all successful applicants. The department also maintains a registry of certified food handlers.

Alberta Labour
9940 - 106 Street
Edmonton, AB
T5K 2N2
Telephone: 427-8848

Employment Standards Code (Teacher resource package).

Alberta Labour offices are also in Calgary, Camrose, Edson, Fort McMurray, Grande Prairie, Lethbridge, Medicine Hat, Red Deer and Vermillion.

Alberta Tourism Education Council (ATEC)
12th Floor, Sterling Place
9940 - 106 Street
Edmonton, AB
T5K 2N2
Telephone: 422-0781
Fax: 422-3430
Info Line: 1-800-265-1283

Alberta Tree Nursery and Horticulture Centre
RR #6
Edmonton, AB
T5B 4K3
Telephone: 422-1789
Fax 427-6096

Community Health & Nutrition
Family Health Services
5th Floor, Seventh Street Plaza
10030 - 107 Street
Edmonton, AB
T5J 3E4

Energy Conservation and Renewable Energy
Western Regional Office
200 - Grandin Park Plaza
22 Winston Churchill Avenue
St. Albert, AB
T8N 1B4

Or

Regional Communications
355, 200 - 4 Avenue SE
Calgary, AB
T2G 4X3

Environment Canada
Inquiry Centre
10 Wellington Street, 1st Floor
Hull, PQ
K1A 0H3
Telephone: (819) 997-2800
Fax: (613) 953-2225

Or

Communications Directorate
Western and Northern Region
Room 210, 4999 - 98 Avenue
Edmonton, AB
T6B 2X3
Telephone: 468-8075
Fax: 495-2478

Environmental Council of Alberta
400, 9925 - 109 Street
Edmonton, AB
T5K 2J8
Telephone: 427-5792
Fax: 427-0388

Fisheries and Oceans Canada
9021 - 46 Street
Edmonton, AB
T6B 3B2
Telephone: 495-7023
Fax: 495-7022

Or

102, 2938 - 11 Street NE
Calgary, AB
T2E 7L7
Telephone: 292-5858
Fax: 292-6088

Health Canada
Publications
Public Affairs, Head Office
Brooke Claxton Building
de la Colombine
Tunney's Pasture
Ottawa, ON
K1A 0K9

Health Protection Branch
840, 9700 Jasper Avenue
Edmonton, AB
T5J 4C3
Telephone: 495-2626
Fax: 495-2624

Or

282, 220 - 4 Avenue SE
Calgary, AB
T2G 4X3
Telephone: 292-4650
Fax: 292-4644

Home Economics and 4-H Branch
2nd Floor, 7000 - 113 Street
Edmonton, AB
T6H 5T6
Telephone: 427-2412
Fax:

Handling Pesticides: Are You Protected
Protective Clothing For Farm Welders.

Industry and Science Canada
Consumer Affairs
10225 -100 Avenue
Edmonton, AB
T5J 0A1
Telephone: 495-2485
Fax: 495-6451

Or

301, 510 - 12 Avenue SW
Calgary, AB
T2R 0H3
Telephone: 292-5604
Fax: 292-6175

National Film Board of Canada (NFB)
The NFB has numerous films and videotapes that may be suitable for Agriculture. For a list of NFB films and videotapes indexed by title, subject and director, or for rental or purchase of NFB films and videotapes, call 1-800-267-7710 (toll-free).

Educational Marketing Officers in Calgary and Edmonton are available, province wide, for workshops, conferences, professional development days and similar activities. For northern Alberta and the Northwest Terroritories, the Educational Marketing Officer can be reached at 495-3012 (fax, 495-6412). For southern Alberta, contact the Educational Marketing Officer at 292-5411 (fax, 292-5458).

ACCESS Network and some school boards have acquired duplication rights to some NFB videotapes. Please consult the relevant catalogues in your school or school district.

The Calgary Public Library has a selection of NFB films and videotapes that can be borrowed free of charge with a Calgary Public Library borrower's card. For further information, contact:

Calgary Public Library
Films and Recordings Department
616 Macleod Trail SE
Calgary, AB
T2G 2M2
Telephone: 260-2650
Fax: 292-5458

Resource Centres

Urban Resource Centres

Calgary Board of Education
Supervisor, Education Media
3610 - 9 Street SE
Calgary, AB
T2G 3C5
Telephone: 294-8540
Fax: 287-9739

Calgary Separate School Board
Supervisor, Instructional Materials
1000 - 5 Avenue SW
Calgary, AB
T2P 4T9
Telephone: 246-6663
Fax: 249-3054

County of Strathcona
Director, Learning Resource Service
2001 Sherwood Drive
Sherwood Park, AB
T8A 3W7

Edmonton Public School Board
Learning Resource Consultant
Centre for Education
One Kingsway Avenue
Edmonton, AB
T5H 4G9
Telephone: 429-8320
Fax: 429-8318

Lakeland School District No. 5460
Area Superintendent
Postal Bag 1001
6005 - 50 Avenue
Bonnyville, AB
T9N 2L4
Telephone: 826-3145
Fax: 826-4600

Medicine Hat School District No. 76
IMC Manager
601 - 1 Avenue SW
Medicine Hat, AB
T1A 4Y7
Telephone: 526-1323
Fax: 529-5339

Red Deer Public School Board
Coordinator of Instruction
4747 - 53 Street
Red Deer, AB
T4N 2E6
Telephone: 343-1405
Fax: 347-8190

St. Anthony's Teacher Centre
Supervisor, Curricular Resources
10425 - 84 Avenue
Edmonton, AB
T6E 2H3
Telephone: 439-7356
Fax: 433-0181

Regional Resource Centres

Zone I

Zone I Regional Resource Centre
Film Supervisor
10020 - 101 Street
P.O. Box 6536
Peace River, AB
T8S 1S3
Telephone: 624-3187
Fax: 624-5941

Zone II and III

Central Alberta Media Services (CAMS)
Film Supervisor
182 Sioux Road
Sherwood Park, AB
T8A 3K5
Telephone: 464-5540
Fax: 467-5469

Zone IV

Alberta Central Regional Education Services (ACRES)
Operations Manager
County of Lacombe
Parkland Regional Library Building
56 Avenue and 53 Street Corner
Box 3220
Lacombe, AB
T0C 1S0
Telephone: 782-5730
Fax: 782-5831

Zone V

South Central Alberta Resource Centre (SCARC)
c/o County of Wheatland
435 B Hwy #1
Strathmore, AB
T1P 1J4
Telephone: 934-5028
Fax: 934-4889

Zone VI

Southern Alberta Learning Resource Centre
(SALRC)
Film Supervisor
Provincial Government Administration Building
120, 909 Third Avenue North
Box 845
Lethbridge, AB
T1J 3Z8
Telephone: 320-7807
Fax:320-7817

Statistics Canada
Regional Office
8th Floor, Park Square
10001 Bellamy Hill
Edmonton, AB
T5J 3B6
Telephone: 495-3023
Fax: 495-5318

PROFESSIONAL ASSOCIATIONS

Alberta Association of Landscape Architects
370, 4445 Calgary Trail
Edmonton, AB
T6H 5R7

Alberta Society of Professional Biologists
Box 566
Edmonton, AB
T5J 2K8

Alberta Teachers' Association
(Specialist Council)
Environmental and Outdoor Education
Barnett House
11010 - 142 Street
Edmonton, AB
T5N 2R1

Alberta Veterinary Medical Association
100, 8615 - 149 Street
Edmonton, AB
T5R 1B3

Canadian Association of Agricultural Engineers
Box 306, Sub Post Office 6
Saskatoon, SK
S7N 0W8

Canadian Association of Plant Physiologists
c/o Department of Botany
University of Guelph
Guelph, ON
N1G 2W1

Canadian Botanical Association
Agriculture Canada
Biosystems Research Centre
Saunders Building, CDF
Ottawa, ON
K1A 0C6

Canadian Society of Environmental Biologists
Box 962 Postal Station F
Toronto, ON
M4Y 2N9

INDUSTRY ORGANIZATIONS

Dairy

Alberta Agricultural Dairy Control Board
Provincial Building
5201 - 50 Avenue
Wetaskawin, AB
T9A 0S7
Telephone: 361-1231

Alberta Dairy Association
Box 3452
Leduc, AB
T9E 6M2
Telephone: 387-3559
Fax: 387-5398

Alberta Goat Breeders Association
RR #4
Calmar, AB
T0C 0V0
Telephone: 985-3863

Alberta Holstein Association
5239 - 41 Street
Innisfail, AB
T0M 1A0

Alberta Milk Producers Society
14904 - 121A Avenue
Edmonton, AB
T5V 1A3
Telephone: 453-5942
Fax: 455-2196

Dairy Nutrition Council of Alberta
14904 - 121A Avenue
Edmonton, AB
T5V 1A3

Fruits and Vegetables

Alberta Fresh Vegetable Marketing Board
220E - 12 Street A North
Lethbridge, AB
T1H 2J1
Telephone: 327-0447
Fax: 327-0766

Alberta Greenhouse Growers Association
RR #1
Red Deer, AB
T4N 5E1
Telephone: 347-4714
Fax: 346-6979

Alberta Market Gardeners' Association
c/o ASCHRC,
SS #4
Brooks, AB
T1R 1E6
Telephone: 921-2272
Fax: 921-2398

Alberta Vegetable Growers Marketing Board
Box 2273
Taber, AB
T0K 2G0
Telephone: 223-4242
Fax: 223-3130

Fruit Growers Society of Alberta
Box 668
Calmar, AB
T0C 0V0
Telephone: 224-3011
Fax: 224-2096

Potato Growers of Alberta
240, 2116 - 27 Avenue NE
Calgary, AB
T2E 7A6
Telephone: 291-2430
Fax: 291-2641

Grains

Alberta Barley Commission
321, 2116 - 27 Avenue NE
Calgary, AB
T2E 7A6
Telephone: 291-9111
Fax: 291-0190

Alberta Corn Committee
Box 822
Lethbridge, AB
T1J 3Z8
Telephone: 327-4561
Fax: 328-3156

Alberta Soft Wheat Producers Commission
Box 875,
1014 - 3 Avenue N
Lethbridge, AB
T1J 3Z8
Telephone: 380-4189
Fax: 328-6880

Alberta Winter Wheat Producers Commission
1205 Michigan Place S
Lethbridge, AB
T1K 3P4
Telephone: 328-0059
Fax: 328-0969

Canadian Seed Growers' Association
Bag Service #47
Lacombe, AB
T0C 1S0

The Grain Academy
Box 2700
Calgary, AB
T2A 4G6
Telephone: 263-4594

Oat Producers Association of Alberta
PO Box 1595
Edmonton, AB
T5J 2N9
Telephone: 444-0066

Western Barley Growers Association
232, 2116 - 27 Avenue NE
Calgary, AB
T2E 7A6
Telephone: 291-3630
Fax: 291-9841

Honey

The Alberta Beekeepers Association
16715 - 113 Avenue
Edmonton, AB
T5M 2X2
Telephone: 489-6949
Fax: 489-3041

South Peace Honey Ltd.
Box 574
Falher, AB
T0H 1M0
Telephone: 925-2396

Tegert Comb Foundation
Box 904
Fairview, AB
T0H 1L0
Telephone: 835-2115
Fax: 835-2873

Williams Bee Ranch
Box 264
Stavely, AB
T0L 1Z0
Telephone: 549-3999

Willms Honey Producers Ltd.
Box 8
Scandia, AB
T0J 2Z0
Telephone: 362-3951
Fax: 362-8990

Wolfe Honey Co.
Box 92
Falher, AB
T0H 1M0
Telephone: 925-2463

Meat

Alberta Angus Association
Box 605
Red Deer, AB
T4N 5G6
Telephone: 346-0221

Alberta Cattle Commission
216, 6715 - 8 Street NE
Calgary, AB
T2E 7H7
Telephone: 286-7143
Fax: 274-0007

Alberta Meat Processors Association
13 - 21215 Wye Road
Sherwood Park, AB
T8G 1C8
Telephone: 922-2170
Fax: 922-2219

Alberta Pork Producers Development Corp.
10319 Princess Elizabeth Avenue
Edmonton, AB
T5G 0Y5
Telephone: 474-8288
Fax: 471-8065

Alberta Sheep and Wool Commission
212, 6715 - 8 Street NE
Calgary, AB
T2E 7H7
Telephone: 295-1988
Fax: 275-8009

Beef Information Centre
215, 6715 - 8 Street NE
Calgary, AB
T2E 7H7
Telephone: 275-5890
Fax: 274-5686

Canada Beef Export Federation
235, 6715 - 8 Street NE
Calgary, AB
T2E 7H7
Telephone: 274-0005
Fax: 274-7275

Canada Pork International
1101, 75 Albert Street
Ottawa, ON
K1P 5E7
Telephone: (613)236-9886
Fax: (613)236-6658

Canadian Cattlemens' Association
215, 6715 - 8 Street NE
Calgary, AB
T2E 7H7
Telephone: 275-8558
Fax: 274-5686

Canadian Charolais Association
2320 - 41 Avenue NE
Calgary, AB
T2E 6W8

Canadian Hereford Association
Communications
5160 Skyline Way NE
Calgary, AB
T2E 6B1

Oilseeds

Alberta Canola Producers Commission
170, 14315 - 118 Avenue
Edmonton, AB
T5L 4S6
Telephone: 452-6487
Fax: 451-6933

Alberta Safflower Growers Association
Box 419
Warner, AB
T0K 2L0
Telephone: 624-2134

Canola Council of Canada
301 - 433 Main Street
Winnipeg, MB
R3B 1B3
Telephone: (204) 982-2100
Fax: (204) 942-1841

Poultry

Alberta Chicken Producers Marketing Board
11826 - 100 Avenue
Edmonton, AB
T5K 0K3
Telephone: 488-2125
Fax: 488-3570

Alberta Egg Producers Board
15, 1915 - 32 Avenue NE
Calgary, AB
T2E 7C8
Telephone: 250-1197
Fax: 291-9216

Alberta Hatching Egg Marketing Board
14815 - 119 Avenue
Edmonton, AB
T5L 2N9
Telephone: 451-5837
Fax: 452-8726

Alberta Turkey Growers Marketing Board
202, 8711A - 50 Street
Edmonton, AB
T6B 1E7
Telephone: 465-5755
Fax: 465-5528

Specialty Productions

Canadian Organic Growers
Box 6408, Station J
Ottawa, ON
K2A 3Y6

Alberta Ostrich Breeders' Association
RR #4
Rimbey, AB
T0C 2J0
Telephone: 748-2636
Fax: 748-2636

Alberta Pulse Growers Commission
Bag Service 47
Lacombe, AB
T0C 1S0
Telephone: 782-7838

Alberta Wild Rice Growers Association
c/o 11708 - 167 Street
Edmonton, AB
T5M 3Z2
Telephone: 455-9909
Fax: 455-0215

Alberta Venison Council
Box 3299
Spruce Grove, AB
T7X 3A6
Telephone: 962-6212

Floral

Edmonton and District Florists' Association
8624 - 119 Avenue
Edmonton, AB
T5O 0W5

Flowers Canada
(The Association of Canadian Florists)
Flowers Canada Accreditation Program
400 Silvercreek Parkway. N
Guelph, ON
N1H 1E8
Telephone: (519) 823-2670
Fax: (519) 823-8920

Flowers Canada, AB Region
4936 50 Street
Camrose, AB
T4V 1R1
Telephone: 672-2553

Equine

Alberta Galloway Association
Box 1, Site 5, RR #1
DeWinton, AB
T0L 0X0
Telephone: 850-0782
Fax: 938-7543

Canadian Morgan Horse Association
Box 286
Port Perry, ON
L9L 1A3

Miscellaneous

Alberta Special Waste Management Corp.
610, 10909 Jasper Avenue
Edmonton, AB
T5J 3L9
Telephone: 422-5029 or
1-800-272-8873
Fax: 428-9627

Alberta Sugar Beet Growers Marketing Board
4900 - 50 Street
Box 190
Taber, AB
T0K 2G0
Telephone: 223-1110
Fax: 223-1022

Alberta Wheat Pool
Farm Information Services
505, 2nd Street SW
Box 2700
Calgary, AB
T2P 2P5
Telephone: 290-5568
Fax: 290-5550

FIS in the Classroom (farm management simulation program).

Canadian Hays Converter Association
310, 4273 - 1st Street SW
Calgary, AB
T2G 4Y8

ENVIRONMENTAL FACILITIES

The following is a partial list of facilities that provide hands-on experience for students in aspects of resource management and environmental education. Contact should be made directly with the facility to obtain details of what is offered to school groups or students.

Alberta Forest Service Museum
Forest Technology School
1176 Switzer Drive
Hinton, AB
T0E 1B0
Telephone: 865-8211

Alberta Tree Nursery and Horticulture Centre
RR #6
17507 Fort Road
Edmonton, AB
T5B 4K3
Telephone: 422-1789 (in Edmonton)
198-5272 (toll free through any government R.I.T.E. Operator)

Alford Lake Conservation Education Centre
c/o Fish and Wildlife Division
Box 369
Caroline, AB
T0M 0M0
Telephone: 722-2423

Bennett Environmental Education Centre
Edmonton Public Schools
9703 - 94 Street
Edmonton, AB
T6C 3W1
Telephone: 468-1439

Calgary Zoo
Botanical Gardens and Prehistoric Park
P.O. Box 3036, Station "B"
Calgary, AB
T2M 4R8
Telephone: 265-9310

Crowsnest Portable Camp
c/o Fish and Wildlife Division
200 Sloane Square
5920 - 1A Street SW
Calgary, AB
T2H 0G3
Telephone: 297-7639

Devonian Botanic Garden
University of Alberta
Edmonton, AB
T6G 2E1
Telephone: 987-3054

Energeum
(Energy Resources Conservation Board)
640 5 Avenue SW.
Calgary, AB
T2P 3G4
Telephone: 297-4293

Environmental Resource Centre
10511 Saskatchewan Drive
Edmonton, AB
T6E 4S1
Telephone: 433-4808

Fort Calgary Preservation Society
P.O. Box 2100, Station "M", #106
Calgary, AB
T2P 2M5
Telephone: 290-1875

Ft. McMurray Oil Sands Interpretive Centre
515 MacKenzie Boulevard
Ft. McMurray, AB
T9H 4X3
Telephone: 743-7167

Glenbow Museum
130 - 9 Avenue SE
Calgary, AB
T2G 0P3
Telephone: 264-8300

John Janzen Nature Centre
P.O. Box 2359
Edmonton, AB
T5J 2R7
Telephone: 434-7446

Kananaskis Field Station
Coordinator of School Programs
Bio Sciences 186
University of Calgary
2500 University Drive NW
Calgary, AB
T2N 1N4
Telephone: 220-5355
Fax: 673-3671

McKinnon Flats Resource Education Centre
c/o Fish and Wildlife Division
200 Sloane Square
5920 1A Street SW
Calgary, AB
T2H 0G3
Telephone: 297-7639

Narrow Lake Conservation Education Centre
c/o Fish and Wildlife Division
Provincial Building
Athabasca, AB
T0B 0B0
Telephone: 675-9137

OTHER AGENCIES

Alberta Debate and Speech Association
202, 17308 - 108 Avenue
Edmonton, AB
T5X 3Y8
Telephone: 484-7929
Fax: 484-2710

Alberta Foundation for Economic Education
901, 10179 - 105 Street
Edmonton, AB
T5J 1E2
Telephone: 421-9331
Fax: 426-2987

The Chartered Banks and Canada's Economy
Labour in the Canadian Economy (teacher resource)
Retail Marketing in Canada
Using Money Wisely.

Alberta Society for the Prevention of Cruelty to Animals
Education Coordinator
226, 3210 - 118 Avenue
Edmonton, AB
T5W 4W1
Telephone: 471-2020
Fax: 479-3267

School Programs (an outline of workshops, classroom visits and learning resources available)

Canadian Co-operative Association
400, 275 Bank Street
Ottawa, ON
K2P 2L6

Co-operative Entrepreneurship: A Case Study in Worker Ownership

Canadian Foundation for Economic Education
501, 2 St. Clair Avenue West
Toronto, ON
M4V 1L5
Telephone: (416) 968-2236
Fax: (416) 968-0488

Entrepreneurship: A Primer for Canadians (teacher resource)
Labour Market: Teacher's Resource Package (teacher resource)
Money and Youth
Women in the Work Force.

The Conference Board of Canada
255 Smyth Road
Ottawa, ON
K1H 8M7
Telephone: (613) 526-3280
Fax: (613) 526-4857

Economic Forecast: Provincial Outlook (research reports, personalized information services).

Ducks Unlimited Canada
1190 Waverly Street
Winnipeg, MB
R3T 2E2

FEESA
320, 9939 Jasper Avenue
Edmonton, AB
T5J 2X5
Telephone: 421-1497
Fax: 425-4506

FEESA offers education training and resource materials focusing on a variety of environmental and educational needs. Programs are developed in partnership with business, industry, government, environmental and education groups.

Junior Achievement of Northern Alberta
(Alberta north of Lacombe, and NWT)
161, 10700 - 104 Avenue
Edmonton, AB
T5J 4S2
Telephone: 428-1421
Fax: 428-1031

Junior Achievement of Southern Alberta
(Lacombe and south)
739 10 Avenue SW
Calgary, AB
T2R 0B3
Telephone: 263-2545
Fax: 261-6988

Materials are available only where Junior Achievement has identified community business consultants and provided inservice.

Kananaskis Country
Coordinator of Environmental Education
Box 280
Canmore, AB
T0L 0M0
Telephone: 678-5508

The Pembina Institute for Appropriate Development
P.O. Box 7558
Drayton Valley, AB
T0E 0M0
Telephone: 542-6272
Fax: 542-6464

The Canadian Environmental Education Catalogue.

Rural Education and Development Association
14815 - 119 Avenue
Edmonton, AB
T5L 2N9
Telephone: 451-5959
Fax: 452-5385

List of speakers for schools
Several modules on cooperatives and farm management
Teacher resource package on cooperatives.

DISTRIBUTOR DIRECTORY

The entries in the distributor directory are arranged alphabetically by code.

CODE	Distributor/Address	Telephone/Fax
ACC	ACCESS Network 3270 - 76 Avenue Edmonton, AB T5B 2N9	(403) 440-777 1-800-252-9363 Fax: 440-8899
AGE	Education and Community Services Branch Alberta Agriculture, Food and Rural Development 7000 - 113 Street Edmonton, AB T6H 5T6	(403) 427-2171 Fax: (403) 438-3362
AGIC	Agricultural Institute of Canada 907, 151 Slater Street Ottawa, ON K1P 5H4	(613) 232-9459
AGME	Broadcast Media Branch Alberta Agriculture, Food and Rural Development 7000 - 113 Street Edmonton, AB T6H 5T6	(403) 427-2127 Fax: (403) 427-2861
AGP	Print Media Branch Alberta Agriculture, Food and Rural Development 7000 - 113 Street Edmonton, AB T6H 5T6	(403) 427-2171 Fax: (403) 427-2861
BBC	BBC Education and Training Sales 65 Heward Avenue Toronto, ON M4M 2T5	(416) 469-1505
CCC	Canola Council of Canada 301 - 433 Main Street Winnipeg, MB R3B 1B3	(204) 982-2100
CFI	Canadian Fertilizer Institute 1540, 360 Alberta Street Ottawa, ON K1R 7X7	(613) 230-2600

Distributor Directory (Cont'd.)

CODE	Distributor/Address	Telephone/Fax
CTV	CTV Program and Archive Sales 42 Charles Street East Toronto, ON M4Y 1T5	(416) 928-6096
DNC	Dairy Nutrition Council of Alberta 14904 - 121A Avenue Edmonton, AB T5V 1A3	(403) 453-5942
ECA	Environment Council of Alberta 8th Floor, Weber Centre 5555 Calgary Trail South Edmonton, AB T6H 5P9	427-5792
ENED	Alberta Environmental Protection, Education Branch 12th Floor, 9820 - 106 Street Edmonton, AB T5K 2J6	(403) 427-6310
EPPC	Environmental Protection Publications Centre 14th Floor, Oxbridge Place 9820 - 106 Street Edmonton, AB T5K 2J6	(403) 427-6132
FREI	Florists' Review Enterprises Inc. P.O. Box 4368 Topeka, KS USA 66604	(913) 266-0888
GCF	Glenwood Cheese Factory Glenwood, AB T0K 2R0	
GGE	Green and Growing Educational Projects 507, 63 Albert Street Winnipeg, MB R3B 1G4	(204) 957-1092 Fax: (204) 452-9748
LRDC	Learning Resources Distributing Centre 12360 - 142 Street Edmonton, AB T5L 4X9	(403) 427-2767

Distributor Directory (Cont'd.)

CODE	Distributor/Address	Telephone/Fax
NEL	Nelson Canada See LRDC Buyer's Guide for information	
OAE	Ontario Agri-Food Education Inc. 144 Chemin Town Line Road Box 460 Milton, ON L9T 4Z1	(905) 878-1510
OCV	Ocean Voice 2883 Otterson Drive Ottawa, ON K1V 7B2	(613) 996-9915
OFAC	Ontario Farm Animal Council 7195 Millcreek Drive Mississauga, ON L5N 4H1	
OUP	Oxford University Press See LRDC Buyers Guide for information	
PBC	Penguin Books 1220 Nicholson Road Hewmarket, ON L3Y 7V1	(905) 836-6730
PBI	PBI Publications Britannica House Waltham Cross Herts, England EN8DY	(0992) 23691
PPIC	The Potash & Phosphate Institute of Canada Suite 704, CN Tower, Midtown Plaza Saskatoon, SK S7K 1J5	
SSC	Canada Communications Group Place du Portage Phase 3 - 16A1 IL Laurier Street Hull, PQ K1A 0S5	(819) 956-4802

CAREER & TECHNOLOGY STUDIES

AGRICULTURE

SAMPLE STUDENT LEARNING GUIDES

INTERIM 1994

Production Basics (AGR103) J.1

Landscape and Turf Management I (AGR206) J.5

Floristry II (AGR308) J.11

Alberta
EDUCATION
CURRICULUM STANDARDS BRANCH

MAY 1994

TAKE THIS MODULE?

☑ This module is designed to allow you to explore techniques used in plant growth or animal production. Skills learned in this module can be applied to future studies and to produce a commodity for sale.

DO YOU NEED TO KNOW BEFORE YOU START?

- No prerequisites required.

WILL YOU KNOW AND BE ABLE TO DO WHEN YOU FINISH?

- ☑ Recognition of facilities and equipment necessary to produce a plant or animal.
- ☑ Ability to plan and carry out a project that uses the facilities available to you.
- ☑ Keeping track of expenses incurred and estimating a selling cost of each commodity produced.
- ☑ Familiarity with a career related to a plant or animal.

SHOULD YOUR WORK BE DONE?

WILL YOUR MARK FOR THIS MODULE BE DETERMINED?

	PERCENTAGE
☑ Participation	40%
☑ Assignments from each section	40%
☑ Test	20%

RESOURCES MAY YOU USE?

- ☑ Alberta Agriculture, recommended maximum density for animal growth as well as material on animal care.
- ☑ Seed catalogs.
- ☑ Nurseries list prices and pot sizes.
- ☑ Equipment catalogs.

Section 1

This section deals with an evaluation of the facilities and equipment that you have available for your use. This information is important for estimating the number of plants or animals that can be maintained within these areas. With your teacher's help, determine the equipment and areas, both indoors and outdoors, that will be available to you.

1. Draw a diagram of these areas. Include measurements in your drawing and calculate the available space in square metres.

2. Make a list of the equipment available and describe the function of each piece of equipment. It would be useful to include a drawing of the items you are not familiar with.

Section 2

With your teacher's help, decide which commodities you would like to produce.

If you choose INDOOR PLANTS, design a chart with the following categories and complete it as you carry out the project.

Name of Plant	Seeding Instruction	Transplanting Date
Size of Pot Used	Dates Fertilized	

If you choose OUTDOOR PLANTS, design a chart with the following categories and complete it as you carry out the project

Name of Plant	Seeding Instructions	Germination Date
Dates Fertilized	Date of Maturity	

As you carry out this project, keep a record of expenses. They will probably include:

1. seed cost
2. cost of growing medium
3. fertilizer cost
4. price of pots.

If you choose to RAISE ANIMALS, design a chart with the following categories and complete it as you carry out the project.

Name of Animal	Food Required	Frequency of Feeding
Dates for Cleaning Enclosure		Dates Exercised

As you raise the animals, keep a record of the expenses. They will probably include:

1. initial cost of animals
2. food costs
3. cleaning costs
4. veterinary charges.

Section 3

1. Calculate the costs for producing your plant or animal.
2. Calculate how much you will have to charge for each plant or animal in order to cover costs.
3. Find out how much professionals charge for similar plants or animals.
4. If appropriate, sell your commodity.

Section 4

The purpose of this section is to research and present certain aspects of a career involving plant or animal production. This information may be obtained from Alberta Agriculture, industries and businesses that are involved in these fields, and from career-related computer programs, government publications and periodicals. Your presentation should describe the nature of work usually performed, where it is done, and the skills you need for this type of work.

LANDSCAPE AND TURF MANAGEMENT (AGR 206)

TAKE THIS MODULE?

- ☑ Successful landscape maintenance depends on the proper and safe use of equipment and a basic knowledge of landscape plant materials.
- ☑ This module will give you experience with the tools and equipment used to maintain a landscape and the basic requirements of the plant material in the landscape.
- ☑ Skill will be developed through practical on-site application.
- ☑ You will also learn about lawn installation techniques.

DO YOU NEED TO KNOW BEFORE YOU START?

You should be able to:

- ☑ Work effectively and cooperatively with classmates.
- ☑ Follow a set of instructions given as part of a demonstration.
- ☑ Follow safety rules associated with activities and achieve a grade of 100% on the basic "Power Machine Safety Test".

WILL YOU KNOW AND BE ABLE TO DO WHEN YOU FINISH?

- ☑ Recognize and describe the proper use if a push mower, lawn tractor, power edger, lawn vacuum, cord trimmer and leaf blower.
- ☑ Be able to start and safely operate at least three of the machines mentioned above.
- ☑ Recognize and describe the proper use of a hand trimmer, half-moon edger, lawn rake and weed puller.
- ☑ Demonstrate the proper use of each tool mentioned above.
- ☑ Understand and apply proper turf maintenance techniques including mowing, watering, trimming and edging, fertilizing and weed control to a residential and/or commercial turf area.
- ☑ Be able to identify five common lawn weeds.
- ☑ Identify the techniques for establishing a lawn.
- ☑ Recognize and describe the proper use of tools and equipment used to install and maintain basic landscape plants.
- ☑ Know the basic types of landscape plants and be able to identify 20 different landscape plants.
- ☑ Demonstrate knowledge of corrective pruning of trees and shrubs.
- ☑ Be familiar with and perform basic maintenance of planting beds.
- ☑ Perform proper seasonal practices of annual and perennial plantings.

SHOULD YOUR WORK BE DONE?

WILL YOUR MARK FOR THIS MODULE BE DETERMINED?

	PERCENTAGE
☑ Practical	50%
☑ Theory	40%
☑ Work Ethic	10%

RESOURCES MAY YOU USE?

- ☑ *Ornamental Horticultural Principles and Practices* (Ingels)
- ☑ University of Alberta Home Gardening Course (John Harapiak)
- ☑ *Alberta Horticulture Guide* (Alberta Agriculture)
- ☑ *The Lawn Expert* (Dr. D.G. Hessayon)
- ☑ *The Tree and Shrub Expert* (Dr. D.G. Hessayon)
- ☑ *The Bedding Plant Expert* (Dr. D.G. Hessayon)

Before beginning any practical work in this module, set up a number of pages in a logbook. The logbook pages are provided. Horticulturists in most areas keep daily records of activities and you will be required to fill in a space in the logbook for each activity that you complete.

☑ Power Machines

- Obtain the owners manuals from the power machines you will be using. Read the manuals and use the information to fill in the "Maintenance Equipment Information Chart."
- Observe a demonstration of the use of the machine and make a check in the chart indicating that you have seen the demonstration.
- Complete the "Lawn Maintenance Hand Tools Chart."

☑ Turf Maintenance

- Complete the worksheets on mowing, watering, trimming and edging.
- While working on the maintenance worksheets or after completing them, practise using the machines you researched to provide basic maintenance for the lawns either around the school or for a private residence. Include mowing, trimming, edging, weed removal, sweeping and raking. You should provide the service through at least two mowings.
- If you provide the service to a private residence, have the resident fill out a "service Sheet" for you outlining what work was done and on what dates.
- Have your use of power machines evaluated. You must be able to demonstrate proper and safe use of a mower, power edger and power trimmer. Any other machines that you may have learned may also be evaluated at this time.
- Observe a demonstration of a drop spreader and/or a broadcast spreader.
- Complete the questions on lawn fertilizers.
- Complete the questions and activities on lawn weeds. To do the lawn weeds chart you may be assigned an areas around the school or a residential area.
- Provide basic maintenance requirements as necessary to a lawn area, including manual weed removal, removal of leaves and debris, application or fertilizer, watering, re-edging planting beds and use of hand trimmers in areas where power trimmers may be too damaging. The practice of these tasks will require you to use a number of hand tools you researched. You should be able to choose the correct tools necessary.

☑ Lawn Establishment

- View the sections of the *Growing Beautiful Lawns* video dealing with site preparation, seeding, and sodding, and answer the questions on lawn establishment. Complete the small calculation activity.

- Write the lawn maintenance quiz.

☑ Landscape Tools

- Complete the landscape tools information page. Note that pruning tools will be added to this information.

☑ Landscape Plants

- Using the references provided, research the following four types of landscape plants: annuals, perennials, trees, shrubs and ground covers. For each type give a definition, tell how it is used in a landscape and give at least three examples. You may present your information in chart form, as information sheets or any other manner that neatly displays the material.

- Research and complete the plant identification assignment. You may do this all at once or a bit at a time, but you must complete the plant ID and write an identification quiz to complete this module. Plants are suggested with the assignment, but your instructor may choose other plants depending on what is available to you.

☑ Landscape Maintenance

- Complete the pruning tools chart.

- Complete the information on time to prune, parts of the tree and shrub as well as corrective pruning techniques.

- After observing a demonstration of corrective pruning techniques for trees and shrubs, practise these techniques on plantings at the school or at a residential site.

- Complete a pruning evaluation.

- Use your references to research information on seasonal requirements of annual and perennial plantings. Research for the season you are in. This information should include preparation techniques such as cultivating and weeding, soil amending, planting or plant removal and general care of plantings including watering and fertilizing. This assignment should be in conjunction with a planting bed that you are working on and may be presented in chart form, report form, or any other appropriate method of communicating the information.

- Provide the appropriate seasonal maintenance practices to annual and/or perennial planting at your school and /or a private residence. Choose a small sized area ass your time may be limited.

- Write the landscape quiz.

TAKE THIS MODULE?

- ☑ The floristry industry is an interesting and creative field that offers a wide range of both artistic and business opportunities.
- ☑ This module will explore the industry of floristry and build on the basic skills acquired in "Floristry I".
- ☑ The focus of this module will be to use design principles and skills to create the different styles of arrangements available.
- ☑ Uses of flowers for different occasions will be an underlying focus and the production of wedding flowers will also be incorporated.

Note: This module can be taken at any time of the year but production of seasonal-type items should be coordinated with the calendar if you plan to market and sell the items.

DO YOU NEED TO KNOW BEFORE YOU START?

You should be able to:

- Work effectively and cooperatively with classmates.
- Follow a set of instructions given as part of a demonstration.
- Follow safety rules associated with each activity.
- Research topics using text and periodical materials.
- Identify and use the basic tools and materials of the floristry industry.
- Condition, care for and be able to identify basic flowers used in the business.
- Perform basic design skills including tying a floral bow, making a bud vase and a corsage, and packaging flowers.
- Work with different types of flower material including fresh, dried and fabric.
- Demonstrate a knowledge of the design principles of colour, composition, balance and symmetry, and proportion and scale.
- Perform simple sketches.

WILL YOU KNOW AND BE ABLE TO DO WHEN YOU FINISH?

- ☑ Know the floristry industry, the difference between wholesale and retail, and where many of the wholesale flowers are produced.
- ☑ Recognize and demonstrate the proper use of bouquet holders and any other tools and materials used to produce the new designs in this module.
- ☑ Identify on site, and know the basic characteristics of, 35 different flowers, flowering plants or tropical foliage plants.
- ☑ Research and perform the proper general care of flowering plants and tropical foliage plants.
- ☑ Demonstrate the use of previously learned design principles and learn and apply the principles of rhythm and harmony, depth and line, and texture and focal point.
- ☑ Use fresh, dried and/or fabric materials to perform the following designs:
  - horizontal table centre with a candle
  - two types of triangular arrangements
  - Hogarth curve (may be added to a wreath)
  - hand-tied bouquet
  - presentation bouquet
  - cascade bouquet
  - one European style arrangement, either parallelism, cushion style or vegetative style.
- ☑ Calculate the cost and price of arrangements.

SHOULD YOUR WORK BE DONE?

WILL YOUR MARK FOR THIS MODULE BE DETERMINED?

	PERCENTAGE
☑ Practical	50%
☑ Theory	40%
☑ Work Ethic	10%

RESOURCES MAY YOU USE?

- ☑ *Ornamental Horticulture Principles and Practices* (Ingels)
- ☑ *Home Floral Design* (The John Henry Co.)
- ☑ *Flowers Canada Accreditation Manual Level I* (Flowers Canada)
- ☑ *The Houseplant Expert* (Dr. D.G. Hessayon)
- ☑ *Florist Review* (periodical)

1. The Floristry Industry

1.1 Using your references, research and perform the following activities related to the floristry industry:
- create a chart that shows the top ten flower-producing countries with the flowers they produce
- give reasons why cut flower production has grown dramatically in developing countries and give two examples of countries where this has happened
- using the Yellow Pages, find the names of your local wholesale outlets. If possible visit a wholesale organization.

1.2 Create a chart that shows the major differences between a wholesale operation and a retail florist shop. Note: You may use some of the information gathered about florist shops from your "Floristry I" module.

2. Identification

2.1 Complete the flower and plant identification assignment. You will require a number of copies of flower and plant identification pages. You should be able to recognize the specimens on site and know the main features of the specimen. Be prepared to write an identification quiz at the end of the assignment.

You may do this assignment all at once or as part of activities throughout the module.

3. Flowering Plants and Foliage Plants

3.1 Use the *Houseplant Expert* and the information provided to research the basic care of these plants. Complete the questions in the package provided.

3.2 Care for a group of interior plants by applying moisture, fertilizer and pest control as necessary for a minimum of two weeks. You may care for a group of plants in the school or use plants in your home. If you use a group of plants in your home, be prepared to list the plants and/or provide a picture. Keep a record of your maintenance activities in your logbook.

4. Design Principles

4.1 Research the design principles of rhythm and harmony, depth and line, and texture and focal point. These principles are in addition to the ones used in "Floristry I". For each principle, tell how it is achieved in floral design and give an example in the form of a sketch. Note: You may demonstrate these principles using one sketch that shows all of them.

5. Design Skills

After viewing a demonstration and filling out a design plan-page, complete the following designs:

- horizontal table arrangement with candle — should be made to fit a specific season
- choose two types of triangular arrangements. Create both types using the same materials for comparison
- Hogarth curve. You will require a taller container for this or you may produce it as part of a wreath or wall swag
- hand-tied bouquet. This should be free standing. This skill will take time and practice. Students can use twigs or sticks to practise the technique before using floral material
- presentation bouquet. Discuss its merits and uses
- cascade bouquet. Most popular type of bouquet. Often over-used. Discuss possible alternatives
- complete one European style, showing parallelism, cushion or vegetative style. This project should be carefully presented ahead of time and will require approval of your instructor.

6. Costs

Obtain a form used by a local flower shop for calculating costs of arrangements and/or design your own to fit the needs of your class. Remember to include the following items when calculating costs:

- flower and foliage materials (you will need the price per stem)
- hard goods prices, including containers, foam, wrapping, bows
- materials such as glue, wire, floral tape, and pins are usually added into the price as part of the mark-up. You will want to establish a constant amount
- labour will not be counted as much in the classroom as it would be in a flower shop, but you should note how long each arrangement takes and use this as a guide for establishing a labour cost
- overhead is not an issue in the classroom, but would be calculated as part of the mark-up in a flower shop
- price of delivery and GST should also be part of your calculation.

Once you have a form that addresses your needs, calculate the cost and possible price for the items you create in this module.

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